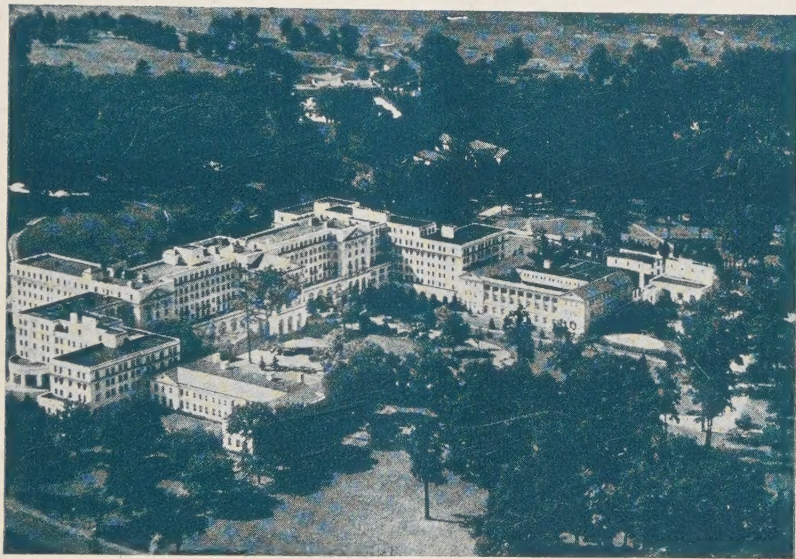


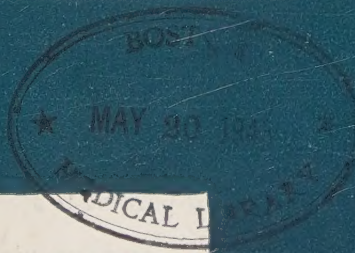
MEDICAL RECORD



UNITED STATES ARMY ASHFORD GENERAL HOSPITAL
Formerly The Greenbrier, White Sulphur Springs, W. Va.
Symposium on Internal Medicine, page 217

April 1943

Vol. 156, No. 4





Acceptability

A CARDINAL FACTOR IN EFFECTIVENESS

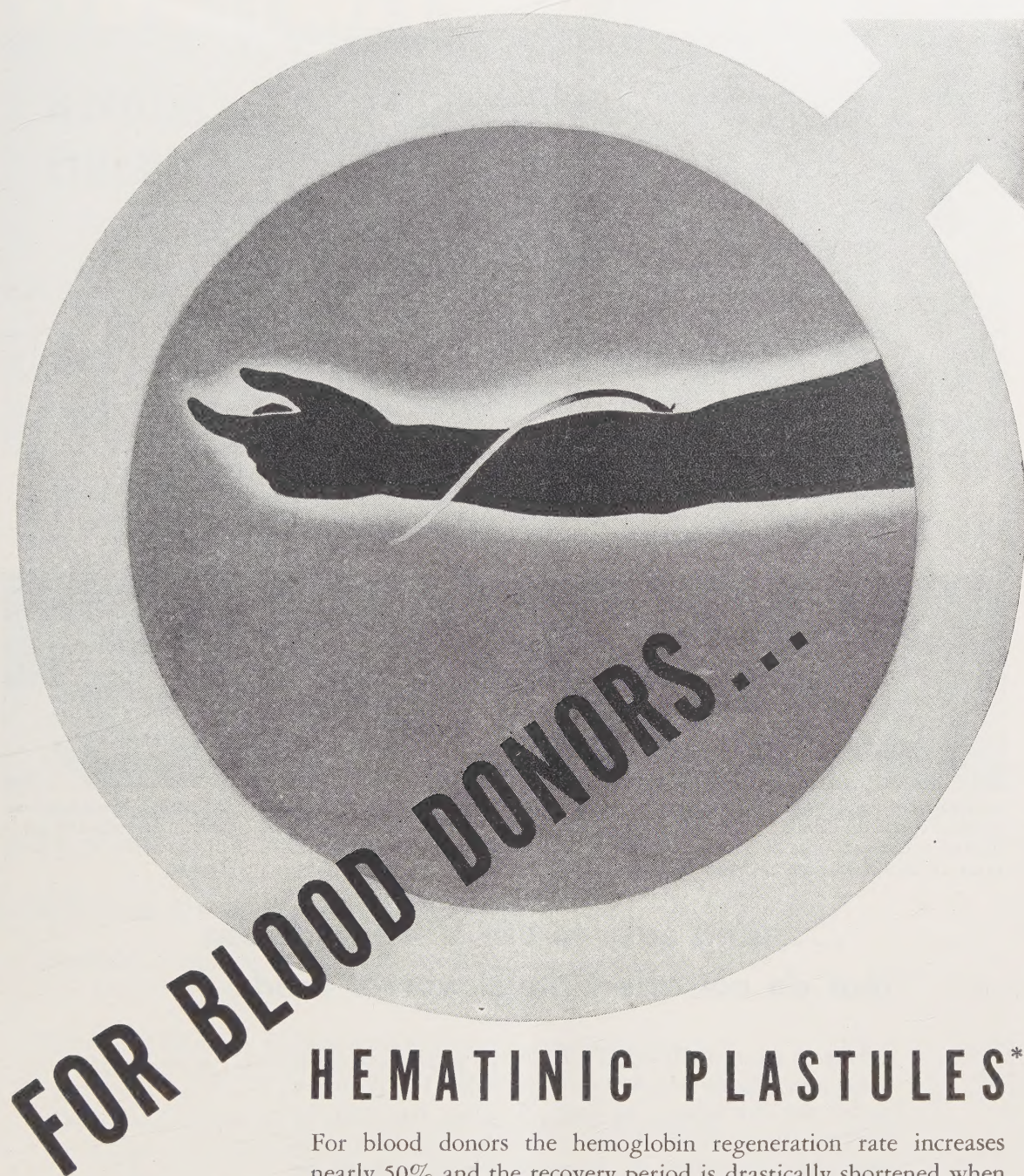
● Physicians are in agreement on the importance of the acceptability of a contraceptive method to the patient and her husband. Any feature of a method found unfavorable by a wife or husband may result in disuse of the method, or abandonment, with consequent loss of efficiency. The problem of acceptability has received particular attention in the formulation of Ortho-Gynol.

*"...The method . . . must . . . find favor in the hands of the user to insure adherence to the method and avoid partial use or discontinuance. Acceptability to the patient seems to be a cardinal factor in any family planning program."

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*Human Fertility, Volume 6, No. 6, Page 168, December 1941





FOR BLOOD DONORS...

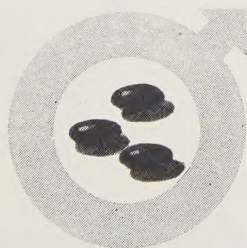
HEMATINIC PLASTULES*

For blood donors the hemoglobin regeneration rate increases nearly 50% and the recovery period is drastically shortened when small amounts of iron are administered.†

Hematinic PLASTULES provide iron in the *ferrous* state quickly available for conversion into hemoglobin. They are easy to take and well tolerated. Hematinic PLASTULES Plain contain dried ferrous sulphate U.S.P.X. 5 gr. and yeast concentrate .75 gr., supplied in bottles of 50, 100 and 1000. Also available with Liver Concentrate.

† Fowler and Barer: "Rate of Hemoglobin Regeneration in Blood Donors." J.A.M.A., 118:421:1942.

* Reg. U. S. Pat. Off.



**Ferrous Iron
Sealed from the Air
but not from the
Patient**

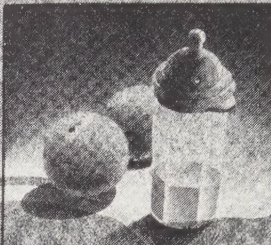
THE BOVININE COMPANY • CHICAGO, ILLINOIS

7 ways TO GIVE INFANTS AND CHILDREN THEIR DAILY VITAMIN REQUIREMENTS

FOR INFANTS:



1. FORMULA. One of the easiest ways to give vitamins is to add Vi-Penta Drops to the baby's formula or milk.



2. ORANGE JUICE, tomato juice, or any fruit juice makes an excellent vehicle for Vi-Penta Drops.

FOR CHILDREN:

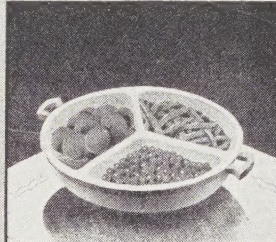


3. MILK. The flavor of even such a bland food as milk is not affected by the addition of Vi-Penta Drops.

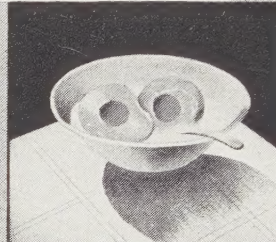
FOR CHILDREN cont'd.:



4. CEREALS are good bases to which to add the child's needed additional vitamins at breakfast time.



5. VEGETABLES served with the noon or evening meal, can be enriched with Vi-Penta Drops, too.



6. FRUITS. Vi-Penta Drops seem to have a natural affinity for stewed fruits—apricots, apples, prunes, etc.



7. DESSERTS. Many mothers enrich desserts and puddings with Vi-Penta Drops.

... using easy-to-use Vi-Penta Drops that do not affect the flavor of food

Here is a remarkable liquid multivitamin preparation which makes it possible for the physician to prescribe a liberal vitamin regime that the mother can easily carry out. Not only do Vi-Penta Drops contain 5 principal vitamins (see chart), but these drops also possess the remarkable advantage of mixing readily with various foods, *without affecting the taste*. When you prescribe Vi-Penta Drops, suggest their use in the several ways pictured here. Mothers will appreciate the information.

10 minims of Vi-Penta Drops contain:	A 4000 U.S.P. units	B₁ 333 U.S.P. units	B₂ 100 gamma riboflavin	C 500 U.S.P. units	D 400 U.S.P. units
--	----------------------------------	---	---	---------------------------------	---------------------------------

Vi-Penta Perles—tiny gelatin globules, each containing the same amount of the vitamins as 10 minims of the Drops. Supplied in packages of 25, 100, and 250.

VI-PENTA DROPS 'Roche'

Hoffmann-La Roche, Inc., Nutley, N. J.



SUPPLIED IN 15-CC GLASS VIALS WITH CALIBRATED DROPPERS. ALSO 60-CC UNIT PACKAGE CONTAINING FOUR 15-CC VIALS

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FORMERLY KNOWN AS THE MEDICAL JOURNAL AND RECORD

PUBLISHED MONTHLY BY

THE MEDICAL JOURNAL AND RECORD PUBLISHING CO., INC.

APRIL 1943

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WHOLE No. 2723

Entered as Second Class matter at the Post Office
at Rutherford, N. J., under the Act of March 3,
1879. Office of Publication, 210 Orchard Street,
East Rutherford, N. J. Editorial and Executive
Offices, 215 Fourth Avenue, New York, N. Y.

SINGLE COPIES FORTY CENTS
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Doctor—A REQUEST

SMALL STEEL FILES for cutting glass ampules can no longer be manufactured, and the existing supply of these files must last for the duration. We are, therefore, asking your cooperation in a campaign to conserve these tools.

The object of such a campaign is to salvage useful files for future distribution to physicians, and at the same time, to add to the national scrap metal stock pile those files which are no longer useable.

Will you please collect your supply of extra steel ampule files now and send them to your druggist or dealer, who will return them to us. All files received by Schering will be sorted and tested. Files which are found to be in good condition will be distributed to the medical profession as the need arises. All others will be contributed as metal scrap to the Government.

We hope that by your efforts a significant quantity of files will be salvaged... files which can be used both in the war effort and for civilian replacements.

IT TAKES MORE THAN METAL TO WIN A WAR... *Buy More Bonds!*

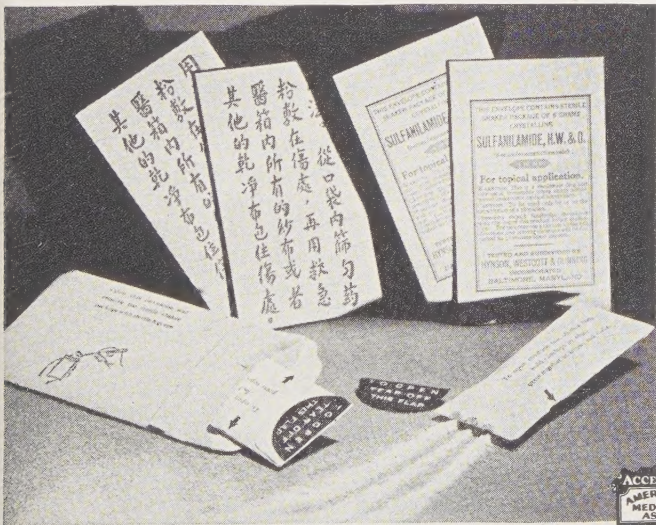
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BLOOMFIELD • NEW JERSEY

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Sterile Shaker Packages Sulfanilamide, H.W.&D.



Our total output of 5 gram Sterile Shaker Packages of Crystalline Sulfanilamide, 30-80 mesh, developed by our research staff in cooperation with military authorities for the treatment of wounds in combat zones, has previously been requisitioned for military needs (totaling more than thirty million packages).

Completion of our new Sulfanilamide Division plant ahead of schedule and the resulting increased production has now made it possible for us to supply these packages for civilian medical use.

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The package will be available only by or on the prescription of a physician.

Complete information and prices on request.

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Baltimore, Maryland

Open Forum

Behind the Doctor

In any democracy the forces that stand behind the doctor are quite as important as the training and ability of the doctor himself. Among the public health movements in the United States no group has recognized this basic principle more promptly or more completely than the American Society for the Control of Cancer in conducting its nation-wide educational campaign against that disease.

In 1936 the Society organized as a practical working unit of lay people what it called the Women's Field Army Against Cancer. From the outset it was specified that this group of lay workers in the educational field should be guided by governing bodies, and the majority of whose members should be medical men or women. The Society and the Field Army thus definitely committed itself to a policy of standing back of the doctor in the fight against cancer.

The wisdom of this attitude has been amply proved. Today, doctors all over the United States report a constantly increasing flow of early cancer cases to their officers for diagnosis and treatment. Since the prospect of cure of cancer is directly related to the observation and treatment of the disease in its early stages, this evidence of the practical value of the Women's Field Army work has convinced the medical organizations of counties and states throughout the Union that real progress can be made in the conquest of the disease.

The mutual benefits to both the patient and the profession have been great. Either group by itself could never be as strong or effective as in close cooperation with the other. Mutual confidence and respect lead to a development of the best qualities of both groups. This sort of progress will count heavily in determining the progressive advance against this disease in the years to come. We are on our way toward cancer control and both the doctor and the prospective patient can face the future certain that sympathy and understanding will continue to decrease the possibility of conflict and obstruction in the drive toward final victory.

C. C. LITTLE, Sc. D., Managing Director
American Society for the Control of Cancer.

Epileptoid Convulsions

This case of an epileptoid convulsion is reported in the interest of epilepsy research. The convulsion had its origin in a chemical dyscrasia.

Over a year ago, I was called early in the morning by the landlady of a rooming house for transients. Upon my arrival, she told me that one of her patrons had fallen in the bath room, making a great noise.

The perplexed patient, M. M., was a well set woman, twenty-five years of age, claiming good habits, denying epilepsy, convulsions, fits, fainting attacks or swoons at any time in her life except when "teething", when she had had a few "spells" of short duration, according to what she had been told by her mother.

The patient had not been sick but was following her mother's custom of taking a teaspoonful of cream of tartar (potassium bitartrate) in a glass of water every day as a spring tonic. She was accustomed to take this

at home, and had found it more convenient to drink the liquid, leaving the sediment in the glass, and extending the period of intake over a day or more, instead of ingesting the entire contents of the glass during the course of an hour.

She had retired the night before, feeling as well as usual, and had awakened at the usual time, but with "a terrific, raging pain in the top of her head" and an urge to run at top speed.

She remembered reaching the bath room and sitting on a chair near the bath tub. ***Her next recollection was finding herself in a strange situation with her head wedged under a bath room fixture. She realized her predicament, she said, and was soon in possession of all of her faculties and extricated herself without injury. She found the chair on which she had been seated had toppled over on her body which lay in a large pool of urine. There was no biting of the tongue nor injury to the teeth. She was not injured by the fall nor visibly injured by the convulsive seizure but she was weak and badly shaken by the experience.

She was given stamped addressed stationery to report subsequent convulsions and was advised to abandon self-medication, which she willingly consented to do. There being no further developments, after more than a year, I feel that this convulsion was induced by an overdose of cream of tartar.

ROSE ALEXANDER, M.D.
Los Angeles, Calif.

War Conference

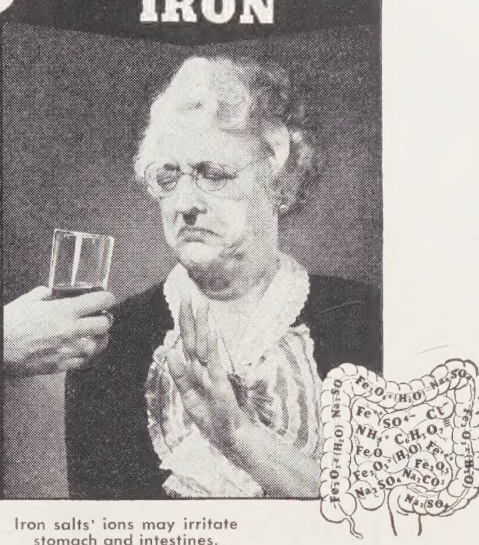
The medical, surgical and industrial hygiene experts who are so ably safeguarding the well-being of more than twenty million industrial workers have agreed to pool their knowledge and exchange their experiences regarding the many new and complex problems of today's wartime production. For this purpose their organizations, which include the American Association of Industrial Physicians and Surgeons, the American Industrial Hygiene Association, and the National Conference of Governmental Hygienists are combining their annual meetings in a four-day "War Conference", to be held at Rochester, New York, May 24-27, 1943.

Among the problems to be discussed from a practical viewpoint are: The mass entry of women into industry; older-age employees, with their various associated problems, proper placement and employability considerations of the 4F rejectees; rehabilitation and proper employment of those already discharged from the military services because of disabling conditions; toxic and other hazards from new substances, new processes, and the use of substitute materials; absenteeism; fatigue; nutrition; effects of long hours; double shifts; two-job workers; overtime; increased industrial accident rates; advances in the treatment of illnesses and injuries, and many others.

This joint meeting will be a report on the state of the nation, by the men who know, in matters of industrial health. Dr. William A. Sawyer, Medical Director of Eastman Kodak, is general chairman; Dr. James H. Sterner and Lieutenant Commander J. J. Bloomfield are arranging the programs for the industrial hygienists.

Physicians and surgeons, hygienists, engineers, nurses, executives—all who are interested in the problems of industrial health and their solution—are invited to attend as many of the sessions as they can arrange for; no registration fee is required.

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The iron-protein of OVOFERRIN is non-irritating, highly assimilable.

Iron salts' ions may irritate stomach and intestines.

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THE REQUIREMENTS of a hematinic and tonic in elderly patients are exacting.

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OVOFERRIN fulfills these requirements adequately and well because of its unique *colloidal* form. Unlike the ionizable iron salt preparations, it is *not* split up by the gastric juice with release of astringent and irritating ions. Also unlike the iron salts (citrates, sulphates, etc.) it

does not form dehydrating and constipating precipitates which may be difficult to assimilate. It arrives in the intestine as a stable, fully hydrated, colloidal oxide which is readily assimilated.

In over 40 years of world-wide use, it has been observed that OVOFERRIN is not only a rapid blood builder but actually stimulates the appetite and improves the well-being. It is palatable, odorless, and non-staining but it does not rely on sweetening, masking, or coating to achieve these properties. They are inherent in its colloidal state. Dose—one tablespoonful in a little milk or water at meals and bedtime.



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For those hard-to-feed
"juniors"

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WITH VITAMIN B₁

A GOOD GENERAL TONIC

FOR your patients who have "lost their appetite" prescribe ENDOGLOBIN, "a good general tonic," used for nearly two decades with excellent results.

Endoglobin is a most palatable and skillfully blended combination of iron, as iron peptonate, liver substance, fresh beef blood (government inspected) and glycerophosphates in a non-alcoholic, sugar-free medium. The beef blood is so treated as to permit easy assimilation of the cells. Vitamin B₁ has been added for its known therapeutic value. It is ideally suited for children, who will readily take it, in preference to similar preparations of less appealing taste. Endoglobin is effective in teaspoonful doses—thus, extremely economical.

HOW SUPPLIED—8 oz. bottles and 16 oz. bottles.

ENDO PRODUCTS, INC.
RICHMOND HILL • NEW YORK

The Fight Against Infantile Paralysis

The progress which has been made in the nation-wide fight against infantile paralysis is shown in the fourth annual report of the National Foundation for Infantile Paralysis. In addition to its national program, the Foundation expanded its local activities. During the year 450 county chapters were formed, so that today 2,900 of America's 3,070 counties are serviced by approximately forty thousand volunteer workers. With half of the subscription money returned to the counties of origin, the total return to the nation's local chapters since the inception of the National Foundation in 1938 has reached the figure of \$4,751,626.80, according to the report.

Principal Achievements

Highlights of the National Foundation's achievements during the past fiscal year were: Teaching of the Kenny method of treating after-effects which entailed establishment of special training programs to provide doctors, nurses and physiotherapists to apply and carry on the method; broadening of study in search of prevention and a real cure; addition not only to knowledge of the nature of the virus but also the method of spread of the infection; reemphasis on the little appreciated rôle of "spasm" and other temporary symptoms that if untreated result in permanent damage; correlation of the study of infantile paralysis with studies of related encephalitic infections.

Grants for Research

For virus research the National Foundation made twenty-three grants to twenty-one institutions for a total of \$543,749.46. Of the grants seven were to men or institutions whose work had not previously been supported by the Foundation.

Among the grants were: Johns Hopkins University School of Hygiene and Public Health, Baltimore, \$59,244 (term of this grant is five years and the total approved for that period is \$300,000); University of Michigan School of Public Health, Ann Arbor \$40,000; George Williams Hooper Foundation of the University of California, San Francisco, \$21,526; Michigan Department of Health, East Lansing, two grants totaling \$21,310; Yale University School of Medicine, New Haven, \$16,000; University of Minnesota Medical School, two grants totaling \$13,255.25; Children's Hospital Research Foundation of the University of Cincinnati College of Medicine, \$12,400; University of Toronto Connaught Laboratories, Canada, \$10,860; Stanford University School of Medicine, San Francisco, \$10,035; University of Southern California School of Medicine, Los Angeles, \$10,000.

To carry on after-effects work, the Foundation made twenty-three grants to sixteen institutions in twelve states and Canada, among them being ten new grants. The total including one appropriation, was \$88,286.33.

Among the grants were: State University of Iowa College of Medicine, Iowa City, three grants totaling \$11,893.38; University of Rochester School of Medicine and Dentistry, New York, \$9,200; Massachusetts General Hospital, Boston, two grants totaling \$7,975; University of Minnesota Medical School, Minneapolis, \$7,050; University of Colorado School of Medicine, Denver, two grants totaling \$7,000; and Columbia University College of Physicians and Surgeons, New York City, \$5,900.

(Continued on page 202)



*I*T'S RHYTHMIC TIMING that counts . . . in bowel function too.

Agarol follows this principle closely: its exceptionally stable emulsion of pure medicinal mineral oil softens and lubricates the intestinal contents. At the same time, it furnishes gentle peristaltic stimulation, which follows from the even diffusion of pure, white phenolphthalein throughout the emulsion. The result is rhythmic timing, and easy and comfortable evacuation.

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For educational purposes there were three appropriations and twelve grants to ten institutions in seven states, the total amount being \$227,540.80. The principal grants were:

Teachers College of Columbia University, New York City, \$6,000; National Organization for Public Health Nursing, Inc. New York City, three grants totaling \$34,280; Georgia Warm Springs Foundation, \$50,120; University of Minnesota Medical School, Minneapolis, \$16,695; Northwestern University Medical School, Chicago, \$10,400; Harvard Infantile Paralysis Commission, Boston, \$10,000; Stanford University School of Health (Women), Palo Alto, Cal., \$9,520; American Physiotherapy Association, Palo Alto, Cal., \$5,000; and D. T. Watson School of Physiotherapy, Leetsdale, Pa., \$4,500.

For epidemics and public health work, there were five grants and eight appropriations, totaling \$27,432.76. The grants were:

Illinois Committee on Infantile Paralysis in joint co-operation with Cook County Public Health Unit and Illinois Department of Public Health, Chicago, \$8,950; New York State Department of Health, Albany, \$3,600; Children's Hospital, Winnipeg, Canada, \$1,080; Vanderbilt University School of Medicine, Nashville, Tenn., \$940.72; Louisiana State University School of Medicine, New Orleans, \$500.

Among the miscellaneous appropriations were \$30,000 for operation of the infantile paralysis center at Tuskegee Institute, Alabama, which provides after-care for Negro orthopedic cases; and \$225,000 to the Georgia Warm Springs Foundation to conduct its work and its research studies.

Industrial Accidents Among Women Workers

During the prewar year of 1940, occupational accident fatalities among more than eleven million working women numbered only about three hundred, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company, while among upward of thirty-four million men gainfully employed, the deaths from occupational accidents numbered about 17,000 in the same period. Now that women are entering many occupations formerly followed almost exclusively by men, it is feared that there may be a substantial rise in the fatal accident rate among employed women. There is, however, no real indication at present that the number of fatal accidents among women is actually rising out of proportion to the number of women employed, says the *Bulletin*. During the year 1942 the toll of fatal occupational accidents among working women for the country as a whole was probably around 350, still a relatively small casualty list.

Insurance records indicate that half of all the deaths among women from injuries arising out of and in the course of employment, were sustained in domestic and personal service activities. Most of the other accidents were among women employed in clerical, trade and light manufacturing positions. Apart from a few deaths due to explosions in munitions plants, none of the deaths resulted from accidents in what are regarded as hazardous occupations. In marked contrast, the bulk of male occupational deaths come from construction, mining, railroad and other transportation industries, farming and heavy manufacturing pursuits. Where women are employed in these industries many organiza-

(Continued on page 204)

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provides iron in easily tolerable quantity and renders it readily assimilable

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In gastritis or dyspepsia associated with achlorhydria, GASTRON alone or with HCl generally brings prompt relief. It is also useful in the nausea and vomiting of pregnancy, impaired digestion of convalescence and old age, and in anemias.

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Case histories of psoriatic patients treated with RIASOL offer convincing evidence of the efficacy of this modern preparation. Serial pictures, such as those here reproduced, are typical of the results that may be expected when RIASOL is employed for the disfiguring and discomforting lesions of psoriasis.

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RIASOL is a modern formula of 0.45% mercury chemically combined with soaps, 0.5% phenol and 0.75% cresol in an oily emulsified liquid. Apply once daily, preferably before retiring, after bathing and thoroughly drying the skin.



A strictly ethical product, RIASOL is advertised to physicians only. Available at pharmacies or direct in bottles of 4 and 8 fluid ounces.



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DURING USE OF RIASOL



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tions have altered their work procedures to fit the jobs to the abilities and physical limitations of women. The heavier part of the work has been assigned to men or, where possible, is done by mechanical means.

While it seems apparent that women will not supplant men in the most hazardous occupations, doubtless large numbers will be employed in operations involving more hazard than has been encountered heretofore in women's work, and probably there will be a measurable increase in the number of less serious injuries among them.

Rapid Treatment Centers for Venereal Disease

The basic responsibility of the U. S. Public Health Service in the new nationwide system of rapid treatment centers for persons infected with venereal disease is to provide consultation service to other agencies co-operating in this program and to furnish specially trained physicians, nurses and technical personnel to operate the centers. More than thirty centers will be in operation by the end of 1943, and it is estimated that fifteen thousand infected persons will be admitted to the centers and rendered noninfectious, their disease either arrested or cured, during the war.

The Rapid Treatment Center project is an outgrowth of the national venereal disease control program begun in 1938, and has been developed by state health departments, the U. S. Public Health Service, the Office of Defense Health and Welfare Services and the Federal Works Agency as a direct and realistic effort to combat a definite wartime threat to our national strength.

The establishment of hospital facilities to which state

health authorities may send a large number of infected persons, with the assurance that they will receive prompt effective treatment, will mean real progress in the ultimate eradication of venereal diseases as well as immediate assistance to wartime control. Federal, state and local health authorities will gain valuable experience in the administration of this type of institution. Finally, by applying the newer techniques in the treatment of syphilis and gonorrhea, under the best medical supervision available in this country, it will be possible to demonstrate the effectiveness of these treatment methods on a large scale, in order that the entire medical profession may profit by the experience thus accumulated.

Public Health Service physicians, assigned on request of state health officers, will be responsible for the medical program in most of the Rapid Treatment Centers now operating, and others will be assigned to those established in the future. Every syphilitic patient admitted to a Rapid Treatment Center is given a complete medical examination to determine his physical capacity to benefit from rapid treatment, and the particular method to be used. Length of stay in the center will depend upon the nature of the disease, the type of treatment given, the patient's condition and the length of the observation period. It is expected that the maximum length of stay will not exceed ten weeks.

Rapid Treatment Centers are already in operation in Phoenix, Ariz.; Denver, Colo.; Chicago, Ill.; Indianapolis, Ind.; Leesville, La.; Monett, Mo.; Rush Springs, Okla.; Aguidilla and Caguas, Puerto Rico; Goldville and Pontiac, S. C.; Knoxville and Chattanooga, Tenn.; Houston, Tex.; Salt Lake City, Utah.

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stands first on the list of palliatives useful
in combating nervous disturbances
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MODERN SCIENTIFIC BASIS

The therapeutic usefulness of garlic has been known since the days of antiquity. The modern medical literature provides a scientific basis for many of these uses, especially as a hypotensive for the relief of high blood pressure and related headache and dizziness.

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The Supply of Practicing Physicians in New York State

Dr. V. A. Van Volkenburgh, assistant state health commissioner, says that, according to a recent survey, there is no critical shortage of practicing physicians in New York state as a whole, or in individual counties as a whole, but that parts of seventeen counties are beginning to feel a definite shortage of such personnel (*Health News*, February 15, 1943). Dr. Van Volkenburgh based his statement on information obtained through the district state health officers as to the number of practicing physicians (exclusive of full-time institution, hospital, public health, teaching, laboratory and retired physicians) in upstate New York as of December 1, 1942. He said that on an estimated population basis, exclusive of persons in institutions, only nine out of fifty-four counties (not including Nassau, Suffolk and Westchester counties) for which information is at present available, have less than one physician per 1500 population when considered from a county-wide viewpoint. In no instance, was the ratio lower than one physician to two thousand population. The Federal Office of Procurement and Assignment under the War Manpower Commission, considers the ratio of one physician to three thousand population a critical shortage. Nine counties were reported by the district officers as lacking physician coverage for rural areas due to sparse population and economic reasons, a condition which existed prior to the war.

Adjustments in connection with the commissioning of physicians in areas where a shortage threatens and the relocation of physicians in the state on a voluntary

basis to meet the needs of areas in which a shortage already exists will be handled by the State Office of Procurement and Assignment.

The staffs of public health departments, Dr. Van Volkenburgh continued, have been depleted to a considerable degree. Approximately twenty-two percent of state employed public health physicians and full-time city and county health department physicians under forty-five years of age are now in the armed or allied services. The departure of a large number of part-time local health officers of villages, townships, and consolidated health districts has necessitated their replacement in many instances by practicing physicians not qualified as health officers. Because of this situation and added duties entailed by the war, state public health personnel have had to assume greater burdens.

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*Magid, M. O. and Geiger, J.: *Intravaginal Tampon in Menstrual Hygiene. Medical Record, May, 1942.*

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International College of Surgeons

The fourth assembly of the International College of Surgeons will be held on June 14th, 15th and 16th at the Waldorf Astoria Hotel, New York, according to an announcement by Dr. Fred H. Albee, international president. The program will be devoted to war surgery and rehabilitation.

Delegations made up of prominent surgeons from the United Nations in addition to those from other countries are expected to attend. These representatives of the United Nations will give outstanding examples of the progress being made in war surgery and rehabilitation under battle conditions by their respective countries. Eminent surgeons in government military and civilian executive officers have voiced approval of the Assembly, which also has the cooperation of the Latin American Chapters of the International College of Surgeons.

Dr. Manuel A. Manzanilla, of Mexico, and Professor Herman de las Casas, dean of the University of Caracas, Venezuela, chairman of the Inter-American Exchange training activities, have been designated chairmen of the Program Coordination for Central and South Americas. Dr. Rudolph Nissen, at present in New York, will act for Europe. The Rehabilitation Committee is composed of Dr. Fred H. Albee, of New York, Dr. William D. Ryan, of Detroit, and Dr. Custis Lee Hall, of Washington, D. C. Dr. William S. Bainbridge, of New York, is chairman of the Military Affairs Committee. The Program Committee has as its chairman Dr. A. A. Berg, of New York, with Dr. Gustave Aufricht as secretary, and represented by members of the College in

Philadelphia, Pa., Plainfield, N. J., Columbus, Ohio, Denver, Colo., Washington, D. C. and Rochester, Minn. Dr. Charles Phillips, of New York, is chairman of the Arrangements Committee, Dr. Chester A. Peake, of Brooklyn, N. Y., chairman of the Exhibit Committee, and Dr. Milton Bodenheimer, of New York, chairman of the Publicity Committee. Serving on the Publicity Committee with Dr. Bodenheimer are Dr. Max Thorek, of Chicago, and Dr. Edwin A. Griffin, Brooklyn, N. Y. Dr. Thorek is the international executive secretary.

Semi-Centennial of the Medical Woman's Journal

The Medical Woman's Journal began the fiftieth year of continuous monthly publication with the January 1943 issue. This journal, established in 1893, was the first in its field—a magazine devoted to the interests of women medical practitioners. Dr. E. M. Roys-Gavitt was its first editor-in-chief; Dr. Claudia Murphy was managing editor, and Margaret Hackedorn (later Rockhill) was manager of the business department. Other well known women physicians have served in an editorial or executive capacity during the fifty years of its existence, and the list of its contributors contains the names of women who have played an important part in the development of medicine. One of its first contributors was Dr. Mary Putnam Jacobi.

Throughout the half century of its existence, the *Medical Woman's Journal* has maintained a high standard of ethics. We extend congratulations and good wishes on its fiftieth anniversary and hope that its next half century will be equally successful.

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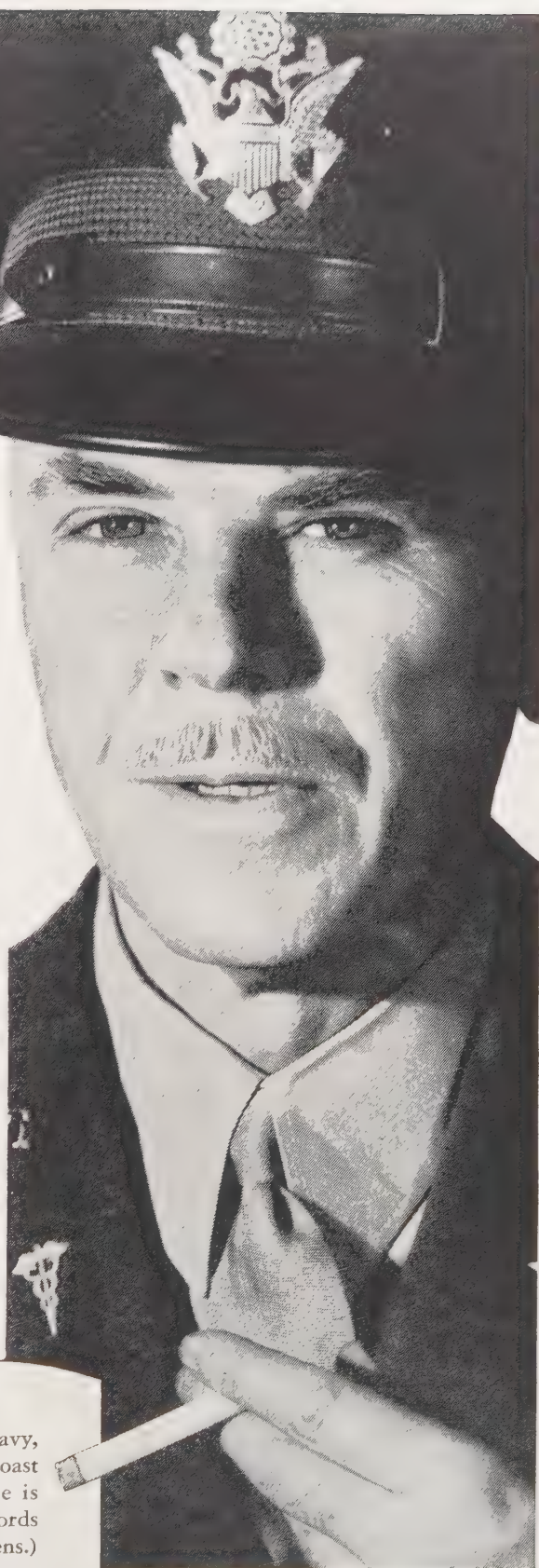
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Our Contributors

FRED H. ALBEE, M.D., Sc.D., LL.D., F.A.C.S., New York, N. Y., one of America's leading orthopedic surgeons, was graduated from Harvard University School of Medicine in 1903. Among his numerous college and hospital affiliations are the following: Honorary professor of surgery at the University of San Marcos, Lima, Peru, the oldest university in the western hemisphere, established more than four hundred years ago; member of the Faculty of Medicine of the University of Chile, South America; chief orthopedic surgeon to Broad Street Hospital and Pan American Clinics, New York; consulting surgeon to the Hospital for Joint Diseases, and twenty-four hospitals in New York, New Jersey, Connecticut, Vermont and Florida. Dr. Albee has made important contributions to orthopedics, one of the most important being the invention of automatic power-driven machine tools to be used in bone surgery. During the World War he demonstrated his original bone work in French hospitals and later in the United States General Hospital at Colonia, New Jersey, where he was chief surgeon. He has made many valuable contributions to the literature of his specialty and is a regular contributor to the leading scientific journals. He has done much to develop the use of moving pictures as a teaching aid to surgery, being one of the first to have clinical films made. He is a member of the leading scientific organizations both here and abroad. His principal recreations are tennis, golf, gardening, and fruit raising in New Jersey and Florida.

* * *

EUGENE MAIER, Ph.D., Venice, Florida, is head of the laboratories at the Florida Medical Center. He is one of the outstanding authorities in this country on snake venom.

* * *

ALEXANDER HATOFF, M.D., Northville, Mich., was graduated from the University of Rochester, (N. Y.) Medical School. He is on the staff of the Wayne County, Mich., Training School, in the capacity of assistant physician, and is associated with the University of Michigan Medical School as an instructor in the department of pediatrics. At the present time he is engaged in various research projects including a study of the effect of steroid hormone products on growth and development. His hobbies include photography and the collecting of classical records.

* * *

LEON FELDMAN, M.D., Philadelphia, Pa., was graduated with honors from the Medico-Chirurgical College of Philadelphia in 1911. He is a specialist in otology, laryngology and rhinology. In 1920 he became an instructor at the Post Graduate School of the University of Pennsylvania in the ear, nose and throat department, and was awarded the Master of Medical Science degree. He did postgraduate work in France and was graduated from the University of Bordeaux in 1934, receiving the University Diploma for special work in ear nose and throat surgery. He later organized the University of Bordeaux postgraduate course in the ear, nose and throat department. During the first World War he served with the 326th Infantry in various sectors in France and received the Regimental Citation and the Chevalier de la Legion d'Honneur.

He is a member of many national and foreign medical societies and has made numerous contributions to the literature of his specialty. His hobbies are amateur boxing, handball, volley ball, and physical gymnastics.

* * *

EDWARD HENDERSON, M.D., New York, N. Y., was graduated in medicine from the University of Glasgow Medical Faculty, and did postgraduate work in a number of universities, both abroad and in this country. He has been engaged in scientific research for many years and is the author of a number of papers.

* * *

WILLIAM L. RHODES, M.D., Corpus Christi, Texas, was graduated in medicine from University Medical College of Kansas City, Mo. He was formerly chief of the eye, ear, nose and throat section of Spohn Hospital and dean of the School of Nursing. He is also a staff member of the Fred Roberts Memorial and Medical Professional Hospitals. His favorite pastime is fishing and he is vice-president of the Isaac Walton League; president of the South Texas Conservation League, and formerly assistant ophthalmologist of the Kansas University School of Medicine. During the first World War he served with the Medical Corps, 35th Division, U. S. Army, with the rank of captain.

* * *

ROBERT R. MEANS, M.D., Osawatomie, Kansas, received his degree in medicine from Washington University, St. Louis, Mo., in 1928. He is in general practice and at present is engaged in research relative to chronic dripping sinuses. He enjoys the outdoors and his greatest pleasure is gained from fishing and hunting.

* * *

JOHN R. STANSBURY, M.D., Cedar Rapids, Ia., received his medical degree from the State University of Iowa College of Medicine, Iowa City, in 1940. He is at present a first lieutenant in the Medical Corps of the U. S. Army, on active duty.

* * *

S. L. KATZOFF, M.A., M.D., LL.B., San Francisco, Calif., is the founder and president for the past fourteen years, of an educational forum called the Western Athenaeum. He is also founder and director of the San Francisco Institute of Human Relations. He is interested particularly in the studies of psychoanalysis, psychiatry, neurology, and human relations. He is an author, editor and lecturer on subjects pertaining to health, psychology and human relations. His pastimes include reading, studying anthropology, genetics, psychiatry and domestic relations.

* * *

ROBERT BOYD, M.D., Brooklyn, N. Y., was graduated from the College of Physicians and Surgeons, Columbia University, in 1891, and served an internship at the Astor Memorial Hospital. For four years he served as an officer in the U. S. Navy and resigned to engage in private practice. He also served four and a half years as a medical officer in the U. S. Army and was honorably mustered out with the rank of captain, Medical Corps, U. S. Volunteers. Three years of this period was spent in the Philippines during the Insurrection. During the first World War he was chief of the medical staff of St. Luke's Hospital, Bethlehem, Pa. He practiced medicine for twelve years in Puerto Rico, and for the past sixteen years he has been in general practice in Brooklyn. His hobbies are ontology, story writing, rifle practice, sailing and music.

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MEDICAL RECORD

PUBLISHED MONTHLY BY

THE MEDICAL JOURNAL AND RECORD PUBLISHING CO., INC.

VOL. 156, No. 4

APRIL, 1943

WHOLE No. 2723

WATER METABOLISM AND ITS RELATION TO OBESITY

EDWARD HENDERSON

New York, N. Y.

In general, the fluids within the body may be divided into several large categories more or less separated from one another into compartments: plasma, interstitial fluids, serous fluids, lymph and cell contents. The only characteristic which all of these fluids share is isotonicity—equality of osmotic pressure. The evidence is strong that interstitial fluids, serous fluids and lymph are simple filtrates of serum (1).

The hypothesis has been advanced that fluid interchange between the blood and tissues depends normally on a simple balance between the hydrostatic pressure of the blood in the capillaries (a pressure which tends to filter fluid) and the osmotic pressure of the protein colloids which, unable themselves to pass the capillary wall, exert an attractive force on water solutions of diffusible substances.

There is ever increasing evidence that the gastrointestinal secretions, at least in the stomach and upper portion of the small intestines, although varying greatly in composition, are isotonic with blood and body fluids.

The total water of the human body comprises approximately seventy percent to eighty percent and the extracellular portion twenty percent of the body weight.

Experiments on lymph production show that there is osmotic interchange between the extravascular and intravascular fluids. Oxygen, carbon dioxide, diffusible substances, or water, will pass out of the capillaries in response to the ordinary osmotic differences. Fluid in the tissue spaces may be taken up by the circulating blood directly, without intermediation of the lymphatics (2).

The intake of water, in accordance with the requirements of the organism as a whole, seems to be regulated almost entirely by the central nervous system, the higher parts of this system, viz., those concerned with appetite or thirst, being particularly involved in the process.

It is well known that a man may keep himself in perfect health and maintain the water contents of his body at a level sufficient for the needs of the organism whether he take two pints or twelve pints of water daily. The whole process of regulation in the normal person, apart from that determined by appetite or thirst appears to be carried out at the other end of the cycle, that is to say, by the kidneys and by the skin.

Any diminution of the total body fluid must involve as a first step, the taking up of extravascular fluid into circulating blood in order that it may be carried to the

organs, such as kidneys, lungs or skin, by which it is excreted.

Rowntree (3) has defined water balance as the daily relation between the total amount of water entering the organism through the ingestion of liquids and food and the total output of water lost from the body by way of the kidneys, bowels, lungs and skin. This does not fully explain the total sources of water supply, however, as in the intake must be included the water of oxidation.

Water is formed from oxidation of organic hydrogen of food. Another source of available water is from oxidation of protoplasmic hydrogen during the breaking down of body material in the process of combustion, yielding the so-called preformed water.

Oxidation of tissues reduces the need for water, thus the water liberated can be disposed of through the skin and in no way disturb the effective water balance.

The amount of water formed in the oxidation of foodstuffs is as follows:

100 grams fat	give 107.1 grams water
" " starch	55.5 " "
" " protein	41.3 " "
" " alcohol	117.4 " "

An ordinary diet of normal mixture will yield 240 grams of water per 2000 calories.

The need of the body for water is determined largely by environment and metabolism, the sensation of thirst indicating the necessity for replenishing the supply. Loss through the lungs is automatic and loss through the skin, while mostly involuntary, depending upon environmental temperature and humidity, may be controlled.

A considerable reserve store of water, far beyond normal requirements, is held in the body, as shown by the fact that man has lived as long as eighteen days without water (3). Generally speaking, considerably more water is ingested than is required by the body economy. A true disturbance of water balance must be represented by edema on the one hand or dehydration on the other.

According to Thomas (4) dehydration is seen almost exclusively either as a disease of infants or as a corollary to alkalosis. In infants, the predisposing cause is usually infection. Ingestion of large amounts of alkalis such as sodium bicarbonate, magnesium oxide and bismuth, and particularly some of the calcium preparations, will produce alkalosis. It is well known that calcium tends to decrease cellular water content and has

been known to produce severe dehydration. Thomas mentions a case of true dehydration as a result of too much calcium, the condition being not so much an alkalosis, or a deprivation of fluid, as a true inability of tissues to take or hold water, the exact reverse of edema. A true dehydration is a chemical condition which renders the cells incapable of retaining fluids.

A great deal of attention has been paid to food metabolism but little or no attempt has been made to regulate the water exchange, *per se*.

In planning a therapeutic program for an obese person, the problem of water metabolism should be taken into account (5). How great a loss of body weight may be due to loss of water may be appreciated from the work of Gamble and Tisdall (6). They computed the water weight lost during fasting in terms of fixed bases and thus were able to determine the amount of water lost from cellular content and intracellular storage. Results in one of their subjects who fasted for fifteen days showed that sixty-two percent of the loss of body weight was due to loss of water. The figures follow:

Intracellular water loss:	
Due to destruction of protoplasm	1,620 cc
Due to reduction of cell volume	470
	2,090
Extra cellular water loss	320
Total loss of body water	2,410
Loss of body weight	3,290 grams
Loss of body weight due to water loss	62 percent

Body water is lost during fasting in consequence of two events, the destruction of protoplasm with release of its water content and a reduction of tissue glycogen causing a decrease in cell volume.

It would seem that a reduction in the caloric intake would give a definite and calculable loss in weight equivalent to lowered heat value, but such is not always the case by any means. A retention of surplus water sometimes persists for days and even weeks (7). In practice, according to Wohl and Ettelson (8), one sees patients who are on a strict diet far below energy liberated, and yet they fail to lose weight, the probable explanation of which is the abnormal retention by the tissues of preformed water.

A diet rich in carbohydrate is accompanied by an increase in weight and by considerable retention of water by body tissues, far beyond normal requirements (9).

Wohl and Ettelson (10) concluded that an important factor in obesity is a disturbance of water metabolism which may lead to hidden water retention not evidenced by pitting edema. These opinions are confirmed by Rothenberg (11). In a previous article Wohl (12) called attention to the importance of water storage as a contributing factor in obesity and reported satisfactory results from the intravenous use of salyrgan in a group of patients who failed to lose weight on a strict sub-maintenance diet, the stationary level of weight being attributed to hidden water retention.

Newburgh and Johnston (13) have reported the tendency of obese patients who are on a low caloric diet to retain water which prevented weight loss and in some cases even caused a gain.

Oertel's researches as quoted by Luciana (14) show that the quantity of water entering the organism affects the accumulation and consumption of fat. When the water loss is great and the intake small, the fat accumu-

lated in the body decreases. The abnormal storage of water is a concomitant of obesity.

Many references may be found in the literature to the effect that obese persons show a tendency toward water retention (15) (16). Evans and Strang (17) feel that this water retention during attempts at reduction is due to the spontaneous alteration in the capacity of fat to store water.

In a paper entitled "Fat or Water?" Rowntree and Brunsting (18) report two cases of obesity: (the patients were enormously overweight) characterized by a striking retention of water and in which weight loss was induced by the use of ammonium and mercurial diuretics and restriction of water intake. The final result was that the weight of the patients was reduced to normal.

Hoffman (19) recommends as therapeutic measures in the treatment of obesity diet and exercise, organotherapy and diuretics. He also states that many of the so-called failures of obesity cures are due not to the failure to lose fat but to accumulation of fluid in the fatty tissues. This water is often difficult to eliminate and requires diuretics to force it out. Many investigators have resorted to the use of powerful diuretics to combat this water retention (20).

A loss of one gram of tissue would seem to make available for loss three to four grams of water, without in any way disturbing the normal water balance.

According to Tice (21), normally, fat may be from ten to twenty percent of the total body weight. In obese persons it is conceivable that the weight of fat goes up to more than fifty percent.

Composition in gram atoms of one molecule of average fat: C 56.1, H 104.00; O 6.0. While there is no analysis of true physiological fat, the proportions are about as follows: stearic acid five percent; palmitic acid fifteen to twenty percent; oleic acid sixty-five to eighty-five percent.

As to the excretion of fat via the alimentary canal. Peters and Van Slyke (22) state that fecal matter was formerly believed to consist largely of food substances which had escaped absorption. The constancy of fecal fat and protein when the dietary content of fat and protein is varied from extremely high values to zero is quite incompatible with the conception that the excretory material originates in the food.

Sweat is a true secretory product and results from the excitation of secretory nerves, and is relatively much more independent of blood flow and blood pressure than is urine. The sweat glands are normally found everywhere in the skin and are numerous, it having been estimated that as many as from 500 to 1900 exist to one square centimeter in some areas of the body. The secretory nerves of the sweat glands belong exclusively to the central nervous system, as shown by sweat during nausea, anxiety or fear, etc. Sweating is invoked by preventing heat loss and increasing heat production.

Activity of the sweat glands at high environmental humidity might serve to facilitate evaporation by supplying a solution on the skin surface which has a higher vapor pressure than that of the isotonic fluids of the epidermis. Laviertes (23) noted extremely large variations in the volume of fluids in the body during the course of an investigation of insensible weight loss from vaporization, after corrections for ingesta and excreta.

Sweat contains from 97.5 to 99.5 percent water and is probably the most dilute secretion in the organism.

It has an acid reaction pH 5.7 and contains, aside from the admixtures of the sebaceous glands, inorganic salts, chiefly chlorides and traces of phosphates and sulphates, and organic compounds of which urea constitutes more than fifty percent, with smaller amounts of urates, creatinin and ethereal sulphates, amino acids, ammonia, fat and other waste products of catabolism. The normal daily loss varies widely.

Benedict and others (24) in a series of investigations as to the effect of hot air baths at 185° F., where the subjects remained in the bath for one to one and one-half hours, report weight losses from 400 to 870 grams. Respiration increased from 14.3 to 19.9, pulse rate increased from 92 to 116—58 to 74, mouth temperature increased from 97.4 to 99.2, rectal and vaginal temperature increased from 98.6 to 100.1. Skin temperature varied according to the position of the thermometer.

According to Peters and Van Slyke (25) the effect of environmental temperature on the metabolism is still subject to some question. On the other hand, this is disputed by McConnell and Yaglolou (26) who compared the metabolism of a number of men at different "effective temperatures" (actual dry bulb temperatures corrected for effects of humidity and air movement). Lowest metabolism was observed at effective temperatures between 75° and 85° F. As the temperature fell lower than this, the mean metabolism rose sharply. As temperatures rose above 90° F., the metabolism likewise increased.

Landis and others (27) conducted a series of experiments on the effect of water baths. The temperature of the water ranged from 95° to 110° F., the time of immersion being two hours twenty minutes. Body temperature rose from 98.4° to 104° F. Other experiments show increases of body temperature at rates varying from 3.4° to 9.5° F. per hour.

Starling (28) states that each degree in rise of temperature increases metabolism ten percent.

The blood volume is increased on exposure to warmth (29); this is partly due to absorption of fluid, for the hemoglobin concentration is reduced. The increase in blood volume is presumably brought about so as to allow a surface vasodilatation without necessarily main-

taining a compensatory constriction in the splanchnic area.

When a subject is exposed acutely to extreme heat over his whole body surface for a relatively long period, marked sweating is caused and occurs equally in a water bath as in the air. In such cases, if the exposure is long enough an increased concentration of hemoglobin may be observed. This can only be temporary, however, as the blood maintains its water balance with great tenacity, drawing on the extravascular fluids for this purpose.

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A PROBLEM CASE*

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The patient, H. A. R., a man thirty-five years of age, a native of Pennsylvania, had been a cook in the service for six and a half years. On April 16, 1942, he was admitted to the hospital with the complaint of muscle cramps and swelling in his right leg, especially the calf, during the preceding five weeks. The admission diagnosis was "cellulitis, acute, nonsuppurative, caused by venous stasis".

His mother and a sister had died of heart and blood vessel disease; otherwise the family history was negative. He had had mild varicose veins of both legs, especially the right, for years. He had been a prizefighter, training and working in the ring until recently. About five weeks previous to admission, he began to notice

cramps and swelling of the right leg while walking, beginning in late afternoon and subsiding with rest.

Physical examination.—The patient was a well developed white man, weighing 212 pounds. Old grease burn scars with pigmentation were noted on the right upper arm. He had a full upper and a partial lower dental plate. There was a birthmark, two inches by one inch, on the inner right ankle. He had moderate varicose veins of the legs, principally on the right, and a bluish discoloration and coldness of both legs, especially the right. His hands and feet were sweaty. The dorsalis pedis arteries were pulsating; blood pressure, right 108/84; left 122/90; lower extremities 160/115. The liver edge was palpable during deep inspiration, one finger's breadth below the right costal margin. He had flat-feet, second degree, with a moderate sized

*Presented at the first monthly staff meeting of an Army Hospital in California, April 24, 1942

bunion on the right foot, and moderate plantar callosities. In the morning both legs were the same circumference. At 4:00 p.m. the right leg was one inch larger than the left and pitted on pressure. Laboratory findings were within normal limits.

Diagnosis.—1, pes planus, moderate, bilateral, symptomatic, more severe on the right, and hallux valgus, right, moderate; 2, varicose veins, bilateral; left mild, right moderate; 3, intermittent claudication, right leg.

Discussion

Here, then, was an Army cook with flat feet, whose right leg cramped and swelled after he had been on it, which symptoms subsided at rest. The history failed to state and stress that, due to a shortage of kitchen help, this soldier did three men's work, then took a long hike with his outfit, when his leg hurt so badly that his medical officer hospitalized him.

Differential Diagnosis

1. Congestive heart failure was ruled out by negative physical and x ray findings.

2. Liver disease or some obstruction to venous return seemed to be ruled out because of the unilateral character of the lesion.

3. Physical findings ruled out thrombophlebitis.

4. Pes planus was not extensive enough to produce the amount of pathology present, in all probability, although hallux valgus was fairly prominent on the right foot.

5. Varicose veins with venous stasis. Veins were not marked—previously asymptomatic; these, however, may be a contributing factor.

6. Endarteritis obliterans, of which intermittent claudication is a symptom. The patient was a light smoker and there was no history of migrating ecchymoses.

7. Acute myositis of right calf muscles. Acute upper respiratory infection three weeks previously, the acute character of the disease subsiding progressively; tenderness in the gastrocnemius muscle.

8. Nephritis seemed to be ruled out by the absence of urinary findings, the location of edema and a normal urine concentration test (Mosenthal test).

9. Focal infection. There may have been a hidden abscessed tooth root.

10. Trauma. The patient gave no history of previous injury of any sort.

Diseases suggested as possibilities: Elephantiasis (early); beriberi, no other evidence; scurvy; hookworm; nutritional edema. Note, however, that the patient was well nourished.

Conclusion

No definite conclusions were reached. It was felt that there might be more than one contributing factor, with varicose veins, pes planus, prolonged exertion, and focal infection all playing a part. It was suggested that the patient be transferred to a unit where extensive, prolonged standing and walking would not be required.

A POSSIBLE CURE FOR ENURESIS

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A few years ago, while in the United States on a visit from Puerto Rico, where I was engaged in the general practice of medicine, a gentleman whom I had met a few days previously, called upon me and said he would like to have me prescribe for his son, who was suffering from bedwetting. The boy was fourteen years of age, of normal development for his age. He ate well and his bowels were regular. He enjoyed athletic sports and was generally in good physical condition. The only thing at fault seemed to be his bladder.

For four or five years he had been suffering from enuresis. He slept under light bedding each night, and frequently at bedtime his father tied a heavy bath towel around the boy's waist, with a large knot over the lumbar region, in the hope that if he turned, this knot would cause pressure and awaken him. When this occurred he would arise and urinate, but when he awakened, about seven o'clock (a.m.), he was greatly chagrined to find he had "wet the bed".

The father informed me that he had taken his son to two specialists, and the boy had taken the medicine they prescribed, diligently, as directed, but the condition was not relieved.

I said, "Then, there is no use in my prescribing anything for him, now, as it would probably be of no benefit. Give me twenty-four hours to think it over and I will have a prescription which, I believe, will cure him."

It has always been my practice, in handling a confinement case, that as soon as the placenta has been expelled and no intrauterine douche being required, I

prescribe for my patient a dram of fluid extract of ergot. This has a very beneficial effect in causing and hastening uterine involution. Therefore, believing that the uterine muscular fiber is practically the same as the sphincter muscle of the bladder, I decided to prescribe this drug, giving the maximum dose for the boy's age.

The father called the next day for the prescription and, when I handed it to him, I said: "This medicine will last eight days; give the boy a teaspoonful three times a day. I do not wish to know anything about the case until the ninth day, when I want you to call and advise me of the result of my treatment."

The father called on the ninth day, as requested, and informed me that the boy had not wet the bed since the second day he had been taking the medicine. He also said that the boy was very happy and was no longer "ashamed of himself".

I advised him to have the prescription renewed once, to be on the safe side. I told him that I was returning to Puerto Rico in about four weeks, and gave him my address there, asking him to write to me in about three months advising me how the boy was, as I would be greatly interested to know. He wrote to me, as requested, and informed me the boy was fine, that the condition had never returned since the second day he had been taking the medicine.

I trust that doctors who read this report will give my treatment a trial in similar cases, as I believe they will achieve the same good results that I did.

73 HENRY STREET

Symposium on Internal Medicine

A PRELIMINARY REPORT ON THE USE OF VENOM IN ARTHRITIS

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The old regime of dietetic stringencies and drugging the victim with salicylates and iodides has been replaced in recent years by a therapy which aims to nourish the patient properly, improve his personal and general hygienic status, eliminate focal infection wherever it may exist, as well as gastrointestinal dysfunction, stimulate all his metabolic and immunizing machinery, and apply local orthopedic treatment wherever it is indicated, both palliative and operative, with due regard to the fundamental pathology of the joint involved. As an example, unguarded function in a knee joint with fixed flexion is most irritating to the joint, and no treatment for the arthritis itself will be efficacious under such a handicap. Of course, the flexion should be corrected, if possible, in the very beginning.

Among the numerous forms of therapy applied to the arthritic conditions in the past, has appeared the use of venoms including bee and snake venoms of all types. In this preliminary report, we wish to elaborate upon the recent developments in the pharmacodynamics, methods of administration, and uses of certain of the venoms in this country.

The venoms of two reptiles have come into use lately, the Indian cobra (1) (*Naja naja*) and the American moccasin (*Agkistrodon piscivorus*) (2, 3). A short description of these agents concerning their biochemical and physiological characteristics follows. Results of general analysis of the venoms show:

1. Protein matter (albumin, globulin, euglobulin, pseudo-globulin), thermolabile, heat coagulable.
2. Proteoses and peptones (not heat coagulable, thermostabile, proteolytic enzymes).
3. Coloring and pigment matter (flavones).
4. Chlorides and phosphates (inorganic) (4, 5).

I. Physiological

In acute envenomisation the effects of two principal substances manifest themselves by the relative prevalence of one or the other, the neurotoxin and the hemotoxin, respectively. (For the sake of brevity the latter term includes all factors affecting the blood and circulation in the vascular bed, i.e., hemorrhagins, cytolytins, and hemolysins.) The prevalence of neurotoxin in cobra venom, as the dominant factor, leads to disturbance of the higher centers, causing convulsions, respiratory difficulties and asphyxia (6, 7).

The hemotoxins, abundant in moccasin venom, lead to exchange of plasma from the vascular bed by vasodilatation and extravasation into the tissue spaces, and to traumatic shock (hemoconcentration through reduction in blood volume as the result of plasma loss) (8). Since both venoms are complex mixtures of these principal constituents, the resulting clinical picture depends essentially upon the reptile involved (see Table I). In experimental poisoning with moccasin venom, for example, the hemotoxic symptoms are predominant,

the neurotoxic symptoms becoming perceptible only later in the stage of intoxication; whereas, in cobra venom, the respiratory and central symptoms appear early, with the hemotoxin playing a subordinate rôle (9).

II. Biochemical

A basic structure has been proposed as common to all reptile venoms extending, probably, also to the insect venoms; with a protein complex rich in sulphur, endowed with toxic enzymatic proteolytic properties, affecting the nerve tissues (neurotoxin), and the blood and its circulation (hemotoxin) (10). Clinical observations showed decrease in the size of tumors after injection of neurotoxic venom (cobra), suggestive of its power to digest fibrin and gelatin (proteolysis) (11, 12). Experimental studies indicate that hemotoxic venom (Russell's viper and moccasin toxin) is more active than cobra toxin in respect to proteolytic activity (13, 14). The following analytical results were found:

	C	H	O	N	S	P	Mg
Crotalus t.t. (7)	47.5	5.9	30.0	13.2	3.4	—	—
Cobra (7)	45.2	7.0	—	14.7	5.5	—	—
Bee venom (15)	43.9	7.4	—	15.4	1.1	0.48	0.1

It was suggested that the high sulphur content in cobra venom (16), is connected with the neurotoxin. Faust (17), in contrast to Calmette (18), thought that the toxic fraction was not of protein nature, but a glucoside free from nitrogen and belonging to the saponin group of hemolytic agents. He isolated ophiotoxin from the cobra venom $C_{17}H_{26}O_{10}$ and crotalotoxin with the composition $C_{34}H_{74}O_{21}$. It has been suggested recently that these glucosides are bound to proteins forming toxic elements (19).

III. Pharmacodynamics of Venom

Various explanations for the action of venoms have been offered, as follows:

1. Analgesic action through neurotoxin (20) (found abundantly in cobra and moderately in moccasin venom, in a proportion of 10:1) (5).
2. Lecithinase action (21, 23).
3. Cholinesterase action (24, 25).
4. Histamine (ergamine, or histamine-like substances. H substance of Lewis, leukotaxine-chemotactic substance of Menkin) (26, 8).
5. Liberation of adrenalin.

1. *Neurotoxic analgesia*.—Ample experimental and clinical evidence shows that the predominantly neurotoxic complex is such as to affect the subcortical centers in the cerebrum—the seat of analgesic action. Cobra toxin was found to have the following characteristics (20):

- a. It is antagonistic to cerebral convulsions.
- b. It influences the temperature regulating center of the brain.

c. Psychological experiments point to central action, favorably influencing mental acuity and intelligence in stimulating nontoxic doses and acting as a paralyzant in toxic doses.

d. It has a threshold of pain comparable to the effect of the opium alkaloids. In addition, neurotoxin was found to be slow in establishing itself upon the nerve tissues; once fixed to the cell, however, its effects are long lasting. Thus, central action (alkaloid-like) and peripheral action (parasympathergic, cholinergic and curari-like), by blocking the impulse at either point, may be conceived as synergistic action in the same di-

ent in variable amounts in reptile venoms which contain appreciable amounts of esterase (16). Thus the plasma esterase content is increased and the transmission (at the synapse) from tissues to nerves, and vice versa, is prevented.

4. *Histamine and protein shock*.—Dale and Laidlaw (31) were impressed by the resemblance of the effects of histamine to certain features of traumatic shock. They found that histamine caused a profound depressor (vasodilator) effect, and increased capillary permeability, with transudation of plasma into the tissues. They suggested that histamine, or a substance allied to it in

Table I: (After Rogers and Megaw, 1935)

CLASS	NERVOUS SYSTEM	ON BLOOD AND BLOOD VESSELS		
		HEMOLYSIS	COAGULATION	HEMORRHAGE
Hydrophidæ (sea snakes)	paralysis of respiratory center and muscular system	very slight	slight reduction	nil
Colubridæ (cobras)	paralysis of respiratory center and muscular system	moderate	nil	nil
Viperinæ (true vipers)	paralysis of vasomotor center	pronounced	intravascular clotting, later incoagulability	very pronounced
Crotalinæ (pit viper)	paralysis of vasomotor center	pronounced	intravascular clotting less pronounced, incoagulability pronounced	very pronounced

rection—the suppression of the sensory impulse, that is, the pain.

2. *Lecithinase*.—This enzyme, changing lecithin to lysolecithin, has been considered a factor in altering the nerve conductivity by affecting lecithin, normally abundant in nervous tissues (21, 23). After the injection of cobra venom the threshold of nerve conductivity to stimuli was found to rise, the sensory being affected before the motor nerves. Lecithinase, known to be present in all animal poisons, has the ability together with lysolecithinase, which is adsorbed to red blood cells, to change the form, the capacity to aggregate, and the sedimentation rate (27). This observation may explain, then, the correction of sedimentation rates which have been reported after injection treatments with cobra and bee venoms (28, 29).

3. *Cholinesterase action*.—Transmission of nerve impulses, acetylcholine and venom esterase: In 1904 T. T. Elliot suggested that sympathetic nerve impulses released a stimulating substance (epinephrine-like) at the nerve endings. Dale (24), studying acetylcholine, noted that it produced effects similar to those caused by parasympathetic nerve stimulation. A similar substance, and probably identical with it, was discovered by Loewi (25), vagus substance. Both Loewi's substance and acetylcholine are rapidly inactivated by blood or tissue esterase, and both are protected from inactivation by physostigmine, the latter acting through its inhibiting power on the esterase (cholinesterase) which otherwise destroys the acetylcholine normally present at the nerve endings. The curari-like effect of neurotoxin on the motor end plates of the muscles (Arthur) (30) points to acetylcholine (Loewi's vagus substance) as the chemical transmitter of certain sympathetic effects. Actually, acetylcholine, present in excess in the tissues and produced by overstimulation of nerves, can be neutralized by injection of venom, pres-

action, was the toxic agent concerned in the induction of the shock state. The liberation of histamine in anaphylactic shock was confirmed on numerous occasions (32, 33).

The experimental intracutaneous injection of histamine in minute quantities shows a triple effect, according to Lewis (34), characterized by (a) local vasodilatation of venules and arterioles by direct action; (b) increase in permeability of the minute vessels by direct action leading to local edema of the skin; (c) widespread dilatation of outlying arterioles resulting from a local reflex.

Krogh proposes the possibility of two effective substances liberated from injured cells: 1, a diffusible factor closely related to histamine, if not histamine itself; 2, a colloid substance, "H", probably less diffusible but otherwise identical with H substance suggested first by Elbeck in 1932 and by Lewis in 1927 (35). Menkin found a diffusible and apparently crystalline material capable of increasing capillary permeability—a "chemotoxic substance" (leukotaxine) (26). Kellaway further demonstrated the liberation of histamine by Australian snake venoms of the hemotoxic type as an important manifestation of the cytolytic activity of venoms, pointing out that histamine has the function of a "local tissue hormone" (8).

5. *Liberation of adrenalin*.—Feldberg has recently shown the ability of snake venoms to liberate adrenalin from the adrenal glands (37) in vivo and in vitro. The marked hemostatic properties found particularly effective in moccasin venom, which rendered injected rabbits resistant to the Schwartzman phenomenon, together with vitamin K—like properties affecting the clotting factors of the blood may be related to the adrenalin action (38, 39, 40). The adrenalin-like effect of snake venoms, their antagonism to insulin and relief of hypoglycemic convulsions, which led some authori-

ties to the routine use of venom in epilepsy, is possibly one of the factors playing a major rôle (41).

Rationale for Use of Hemotoxic Venom (Moccasin Venom)

The fact seems to stand out that histamine (ergamine) after the injection of venom is liberated from the tissues. Histamine, as elaborated in the body, appears to have no effect until it is released by the proper stimuli into the tissue fluids. This necessary stimulus is furnished by the injection of venom which contains a factor identifiable as, and indistinguishable from histamine. Histamine output varies with different venoms. Only one-sixth of the hemotoxic venom of Russell's viper was needed to yield the same total of histamine as with cobra venom (8).

Role of Histamine

The minute, controlled and ever-increasing quantities of histamine liberated by the desensitizing doses of hemotoxic venom may serve to administer mild repeated shocks to the hypersensitive organ—the skin—with the result that a relative tolerance or insensitivity is developed in this so-called "shock organ".

Therapeutic uses.—The use of histamine in the relief of pain in neuritis and arthritis has been advocated for a long time. The usefulness of the indirect release of histamine through venoms by tapping its natural storehouse is of recent origin (42).

Clinical Experiences

These considerations and the experiences of others, especially of those working clinically with the venoms of European reptiles (43, 46) (*V. berus*, *V. ammodytes*, *V. aspis*) and Brazilian reptiles (47) (*cascabel*, coral and *yararás*¹) led us to use American moccasin venom in the treatment of arthritis and similar conditions². It seemed doubtful that the predominantly neurotoxic and centrally acting venom of the cobra would offer more favorable prospects than the hemotoxin (moccasin) in the treatment of conditions such as arthritis, neuritis, neuralgia and spastic paralysis, where peripheral action influencing circulation mainly in conjunction with limited neurotoxic action should be in the foreground of considerations. These theoretical considerations, it seems to us, have been borne out by the results of clinical studies we have obtained in various conditions in collaboration with other workers, T. Wheeldon, and P. Butler. Wheeldon used moccasin "venomin" in twenty-five cases of spastic paralysis, the patients ranging in ages from three to twenty-five years; treatment was continued from two to six months (2). Best results were obtained in cases of athetosis, a condition in which the hands and arms perpetually wind about each other; synkinesia, in which a very minor stimulus on one part of the body will precipitate movement in another; and ataxia, a condition akin to drunkenness—all follow injury sustained at childbirth. Patients treated with moccasin venom showed varying degrees of improvement. Butler stated, in his study of arthritis and allied conditions, that "neither a cure-all nor the limbering up of ossified joints was expected, but

ample material benefit from the venom was found in fully ninety percent of the cases, symptomatic cures in at least eighty-five percent, and demonstrable cures in sixty-six percent of all cases" (3).

There follows a preliminary report on results obtained in a series of fifty-six cases at the Florida Medical Center. The summary shows that with rheumatoid and osteoarthritis ten patients had doubtful results (slight relief). The remaining forty-six cases showed results in the form of subjective and objective improvement after receiving venom treatment extended over periods of from two weeks to two months. In some instances a second course of treatment was found necessary after a pause of one to three months, increasing the patients' chances for ultimate maximum benefit.

Under the term "relief" is included evidence of marked and lasting respite from pain and discomfort, improved motion and control of the extremities, decrease of swellings when measured by the reduction of circumferences of the joints and various changes in the blood status generally considered prognostically favorable, leading to improvement of frequently striking character (increase of hemoglobin, decrease of rate of sedimentation, correction of the "shift to the left" in the Schilling count through the elimination of the more immature forms of nucleated cells, i.e., the eosinophiles and the stab forms).

Dosage and injection.—The venom is prepared in two concentrations, A, the weaker, and B, the stronger solution. The standard dosage is 0.05 cc. or one unit (wheal) given intradermally, preferably from a one cc. tuberculin syringe mounted with a 25-27 gauge needle, splitting the skin and raising a small wheal. The dose is increased by injecting more units or wheals which may be spread over a larger surface to avoid or minimize local reactions. It is also feasible to inject two units (0.1 cc.) in one wheal, reducing therewith the number of punctures of the skin, especially when in the progress of treatment a greater number of wheals (five to ten) has to be given. The injections are painless since novocain (0.5 percent) is added to the solution. In certain cases it is of advantage to make the injections over the area of pathology, i.e., over the knee or elbow, as an example, especially after the patient has been desensitized by previous treatment. This precaution will prevent the flare-up of an inflammatory local reaction and, on the contrary, will help to reduce local pain and swelling. Relief from these symptoms in these patients was obtained; their general condition, their sleep and appetite were improved, enabling them to dispense with barbiturates and other sedative medication.

Indications.—Venom is useful, from our experience, in prolonged cases of acute polyarthritis and the sub-acute and exudate forms of chronic polyarthritis. However, one should be reminded that the exclusive application of one single medicament in the severe picture of chronic polyarthritis should be avoided. Venom therapy, as we see it, has its place in the framework of planned and systematic treatment of this serious disease (polyarthritis) where the results are less obvious, taking into consideration the factors of diet (46), physiotherapy, psychology, and pharmacology. However, in some cases of noninflammatory, degenerative rheumatic joint disease a marked lessening of the pains may be observed. Besides its use in the conditions we have described, moccasin venom as a supplemental

¹The reader must be cautioned not to be confused by the term "cobra" used in Portuguese (Brazil) to denote reptiles as the *cascabel*, coral, and *yararás* (Viperinae) in contradistinction to the Indian cobra (*Colubridae*).

²The venom for these studies was kindly furnished by the Venomin Company, Lorain, Ohio, for which we make acknowledgment.

therapeutic agent should be recommended in neuralgia and neuritis (sciatica, lumbago, myofascitis, polyneuritis) since favorable results in these conditions have been obtained by the authors and similarly reported by Butler (3). Many of the arthritic patients in which the disease has not settled in any one joint permanently and where the complaints are of such character as to involve impairment of general functions, such as limb motion, caused by a fugacious, migratory type of pain, are benefited by venom therapy.

Contraindications.—Since a small percentage of the patients may have a hypersensitivity to the venom it is a necessary precaution to give a trial injection of 0.01 cc. of the A concentration before the beginning of the treatment proper. Only when this injection is tolerated well is the patient considered as suitable for this form of therapy. All patients in this series had periodical urinalyses made, in view of the fact that in some of them there were accompanying hypertensive, cardiac or diabetic states. No abnormal findings or aggravation of these accompanying factors were observed.

Commentary.—Anaphylaxis was observed only in rare instances and, when observed, was in the form of slight itching, slight malaise or headache, controllable by symptomatic treatment and withdrawal of the injections for a few days. Reactions of this kind only indicate that treatment was pushed too fast, since no further reactions were observed when the dosage from there on was reduced and slightly increased again. It is of advantage to maintain therapeutic doses slightly below the threshold of the dosage which might cause reaction, a dose which can be found only by trial and experience. However, since we have two concentrations available (venomin A, the weaker one, and venomin B, the stronger), treatment, of course, is started always with the A solution, a conservative and safe procedure excluding reactions, resulting in desensitization of the patient sufficiently by the time the therapeutically effective B concentration is used.

For illustration the following cases have been selected and described in detail:

Case Histories

CASE I.—The patient, P. H., was a man, aged forty-four, a liquor dealer. The diagnosis was infectious arthritis of ten years' duration. The treatment consisted of twelve units of venomin A and fifty-two units of venomin B, a total of sixty-four units over a period of fifty-six successive days. The subjective results were the disappearance of pain and stiffness in the hand, fingers and ankle. Objective improvements consisted of a decrease in sensitiveness, and an increase in mobility in joints.

Blood status: Before treatment: hemoglobin, 76 percent; red blood cells, 3,970,000; white blood cells, 7,800; Schilling count: stab cells 7, lymphocytes 38, segmented cells 55; sedimentation 12. At discharge: hemoglobin, 88 percent; red blood cells, 4,350,000; white blood cells, 6,750; Schilling count: lymphocytes 41, segmented cells 59; sedimentation 8.

CASE II.—The patient, K. T., was a woman, aged forty-six, a housewife. The diagnosis was rheumatoid arthritis in the fingers, elbows, and both knees of seven years' duration. The treatment consisted of seventeen units of venomin A and twenty-two units of venomin B, administered on forty-four successive days. The sub-

jective results were lessening of pain in all affected parts and sound sleep. The objective improvement consisted of an increase in mobility in both knees with a reduction of swelling.

Blood status: Before treatment: hemoglobin, 76 percent; red blood cells, 3,470,000; white blood cells, 6,350; Schilling count: stab cells 4, lymphocytes 63, eosinophiles 7, segmented cells 26; sedimentation 18. At discharge: hemoglobin, 86 percent; red blood cells, 4,950,000; white blood cells, 7,800; sedimentation 12.

CASE III.—The patient, E. E., was a man, aged sixty-one, a worker in a rubber plant. The diagnosis was chronic arthritis of four years' duration, which started suddenly in the right knee. This condition was previously investigated and treated with nonspecific vaccines. The hands and fingers were stiff before the course of treatment. The treatment consisted of six units of venomin A and fourteen units of venomin B administered on ten successive days. Results: On March 9th, the circumference of the left knee was fifteen and three-quarters inches, and on March 14th it was fourteen and one-half inches. On March 12th, the circumference of the right knee was sixteen inches, and on March 14th, it was fourteen and one-half inches. Within one week the patient was practically free from pain with a disappearance of fluid from the knees, and of pain and stiffness in the hands and fingers.

Blood status: Before treatment: hemoglobin, 72 percent; red blood cells, 4,770; white blood cells, 9,100; Schilling count: stab cells 14, lymphocytes 32, segmented cells 50, eosinophiles 4; sedimentation 14. At discharge: Hemoglobin, 86 percent; red blood cells, 5,150,000; white blood cells, 6,350; Schilling count, stab cells 4, lymphocytes 54, segmented cells 42; sedimentation 8.

CASE IV.—The patient, T. H. M., a woman aged sixty-six, was the wife of a physician. The diagnosis was rheumatoid arthritis of the knee and ankle of four years' duration. The treatment consisted of four units of venomin A and twelve units of venomin B, a total of sixteen units administered over a period of thirty-six days. The subjective results, after four units of venomin A and twelve units of venomin B, were that practically all pain disappeared in the joints involved, and the patient could walk longer distances and do her housework.

Blood status: Before treatment: hemoglobin, 76 percent; Schilling count: segmented cells 66, lymphocytes 28, eosinophiles 3, basophiles 1, monocytes 2; sedimentation 13. At discharge: hemoglobin, 84 percent; Schilling count, segmented cells 61, lymphocytes 39; sedimentation 7.

CASE V.—The patient was a business woman aged fifty-eight. In 1930 she had a streptococcal infection of the throat following polyarthritis, from which she recovered. She suffered a relapse in 1938 and remained in a wheel chair for two and a half years. The foci of infection were removed and various treatments given. Present status, ankylosis of both knees. The treatment consisted of seventeen units of venomin A, after which the patient was able to stand for the first time in two and a half years, and with relative freedom from pain. After ten units of venomin B had been administered, she was ready for the walker. Results: Before treatment was begun the circumference of the left knee was seventeen and one-half inches, and after two weeks of treatment it was seventeen inches. The circumference of

the right knee remained unchanged but there was continuing improvement. The patient now sleeps and rests with little or no pain.

Blood status: Before treatment: hemoglobin, 92 percent; red blood cells, 5,720,000; white blood cells, 7,950; Schilling count: stab culture 4, lymphocytes 34, eosinophiles 8, segmented cells 54; sedimentation 10. At discharge: Hemoglobin, 94 percent; red blood cells, 5,550,000; white blood cells, 6,720; Schilling count, lymphocytes 48, segmented cells 50, eosinophiles 2; sedimentation 7.

CASE VI.—The patient, A. A., was a woman aged seventy-two. The diagnosis was advanced osteoarthritis with extensive osteophytes, associated with a limitation of motion, and severe pain in the right knee which had recently extended to the left knee. The patient had been confined to a wheel chair for six months. Cystitis was present. The treatment consisted of twelve units of venom A and eighteen units of venom B, administered over a period of nineteen successive days. The subjective results consisted of a general improvement and less pain. The objective improvements were that on the ninth day the patient was able to stand up for the first time in four months (after the administration of twelve units of venom A and seven units of venom B), and on the tenth day the patient was out of the wheel chair. At discharge she was able to walk a few steps.

Blood status: Before treatment: hemoglobin, 90 percent; red blood cells, 4,870,000; white blood cells, 7,550; Schilling count, lymphocytes 27, segmented cells 55, eosinophiles 6, basophiles 2, monocytes 10; sedimentation 16. At discharge: Hemoglobin, 93 percent; red blood cells, 4,900,000; white blood cells, 6,150; Schilling count: lymphocytes 24, segmented cells 48, eosinophiles 8, basophiles 1, monocytes 19; sedimentation 12.

Conclusions

Our findings suggest that a purely neurotic venom of the cobra type is not as effective for the treatment of conditions described above as a venom with pronounced peripheral action (lecithinase, cholinesterinase, histamine, chemotactic effect-leukotoxin). The results obtained by other investigators with cobra toxin in the conditions discussed above also confirm this observation.

Table II: Summary of Clinical Results

FORM OF ARTHRITIS	RELIEF	NO RELIEF
Osteoarthritis* (hypertrophic)	18	6
Rheumatoid (atrophic)	28	4

*Includes: infectious arthritis (gonorrheal, tuberculous, and streptococcal).

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(Continued on page 246)

TREATMENT OF SINUS DISEASE WITH COLLOIDAL CALCIUM GELATINATE*

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Sinus disease covers a vast number of conditions in the field of nose and throat work. Being a physician in a rural community, I am most concerned with hypertrophic sinusitis and can best treat that condition safely. It is for this reason that my experience and observations have been mainly with that type of nose and throat disease. Today, however, there is an increased necessity for all doctors, who have had a good general training, to take care of these patients. The call for service in the armed forces has reduced the number of specialists even in the city, and the rural communities are rapidly becoming more isolated, because of reduced transportation facilities. Everyone today must do more than he did before in the same length of time.

Hypertrophic sinusitis seems to cause the patient no end of discomfort, because of the constant coughing, blowing the nose and the necessity of expectorating which repeatedly occurs at inconvenient times and in inconvenient places, all of which frequently are quite embarrassing. This chronic condition is very debilitating. Not including the other common causes of halitosis, chronic hypertrophic sinuses produce a very definite and unpleasant fetid odor to the breath. Chronic dripping sinuses are frequently the cause of stomach disorders, loss of appetite, lack of desire for activity on the part of the patient, rheumatic joints and a host of other conditions which the general practitioner as well as the specialist is expected to do something about. These facts are of course common knowledge to us all, but I find too often they are not given as much consideration as is their due.

It is my earnest hope that all general practitioners will become more interested in chronic sinusitis, and when they recognize the existence of the condition, realize that something can be done to relieve the patient, bearing in mind that chronic sinusitis is after all a major factor in the production of bronchosinusitis and its more important relative, pneumonia. This is particularly important when we consider that chronic sinusitis exists.

In the past the type of treatment has varied extensively. This is perhaps due to the fact that each doctor has tried conscientiously to improve in one way or another the knowledge which he and others held available at that time. Some of the commonest treatments, used in the form of drops, sprays, irrigations and topical applications, have consisted of a variety of preparations which were made of one or more of such drugs as phenol, menthol, silver nitrate, eucalyptol, hypertonic saline, ephedrine and cocaine, and many varieties of oils. All too frequently, too much drug was used, over too long a period. For those who did not choose medication as the answer, we found surgery being expanded from the beginning of a little drainage to the extreme where all possible bone was removed and even the mucous membrane stripped, leaving raw, unpro-

tected bone surfaces. The fallacies and pitfalls are all too well known by some and readily seen by others at the present time.

It is my belief, as well as the belief of those doctors who have cooperated with me, that colloidal calcium gelatinate serves as a protective coating in the nose and adjacent sinus spaces. This coating allows healing to occur without further irritation of the raw surface by a foreign substance; irritating secretions and even sudden temperature changes are not so noticeable. Colloidal calcium gelatinate is believed to foster healing by reactions occurring between it and the secretions found present in the irritated ulcerated areas. The extent to which this is or is not true may be somewhat in doubt and the explanations may be somewhat inaccurate, but at a later date we may possibly be considerably more definite. At the present time, however, we simply say that the percentage of healing and improvement of the condition is surprisingly high. This fact alone is most gratifying to those doctors who have had considerable experience, as well as to the patient who is weary of seeing various doctors and is still unimproved, a not too serious but extremely annoying condition.

The clinical results vary somewhat, only as those given by the general practitioner and the specialist. The specialist must see and treat those cases which too often the general practitioner has been unable to help. Therefore, the percentage of improvement or complete disposal of symptoms must necessarily be lower. With the specialist, complete relief of symptoms was obtained in fifty-two percent of the cases, improvement in thirty-three percent, and in fifteen percent there was little or no result. This latter percent might have been reduced somewhat had certain patients cooperated more completely in the treatment or had allowed the removal of trigger areas or similar irritative sites. The average results observed by the general practitioner showed complete cessation of symptoms in sixty-eight percent of the cases, improvement in twenty percent, and no change to little improvement in twelve percent. The cooperation of the patient with the country doctor or the general practitioner seems to have been more complete.

The following cases selected at random from the records taken from the files include patients of my own and those of my associates.

Case Histories

CASE I.—G. S., a colored woman, aged forty-seven. The patient was first seen on November 2, 1939. She gave a history of mucus dropping into her throat the year around. She seldom had acute upper respiratory or sinus infection; increased humidity caused more symptoms. Examination revealed thick postnasal discharge, chronically enlarged turbinates, no obstruction. Illumination of the sinus revealed cloudiness, no complete obstruction. Diagnosis: chronic hypertrophic sinusitis.

*Colloidal Calcium Gelatinate is a product of The Columbus Pharmaceutical Company, and is marketed under the trade names of Nazoid (for the nose) and Optoid (for the eye).

Treatment: Colloidal calcium gelatinate was instilled into the nostrils, four or five drops, four or five times a day. Some relief was noted at the end of the first week. There was noticeably marked improvement in six weeks. Sixty days after the first treatment, the drops were used only three times a day. The mucous membrane appeared normal, and there was little or no discharge.

CASE II.—L. A. D., a white man, aged thirty-eight. The patient was seen first on September 8, 1937. He gave a history of sore eyes, dull headaches, stomach distress, and vertigo. Examination showed a thick, gummy discharge hanging postnasally, marked enlargement of both turbinates—enlarged both sides of the nose; ventilation was poor. Diagnosis, chronic sinus disease.

Treatment: Several drops (four or five) of colloidal calcium gelatinate was instilled into the nostrils every three hours. Relief was observed in three or four days. The patient could breathe more easily. Examination revealed the turbinates reduced in size. After the third week treatment was reduced to three times daily; after the seventh week of treatment, the mucous membrane was apparently normal. The turbinates were practically normal in size; there was good ventilation, and no symptoms. The patient has noted a reduction in the number and severity of head colds.

CASE III.—V. E. Z., a white man, aged fifty-four. The patient was first seen on September 8, 1937. He complained of continuous spitting and bad breath and said that food did not taste good. He inferred that he had high blood pressure because of dizziness. Examination revealed postnasal drip of the usual type, but little pathology in the nose. A sinus illumination showed right frontal and right maxillary almost completely filled.

Treatment: Colloidal calcium gelatinate was used as an irrigating fluid to wash the sinuses thoroughly. Some relief of symptoms was noted during the first two or three days, and there was marked relief after ten days' treatment. Irrigations were discontinued at the end of the second week and colloidal calcium gelatinate was used four or five times a day, as drops in the nose. The use of suction to drain the right maxillary was continued. The condition subsided, and all unpleasant symptoms disappeared in the seventh week. At the end of three months, no symptoms had recurred, although the patient had an occasional head cold. Colloidal calcium gelatinate is used following a cold and the patient's nose becomes perfectly clear and remains so.

CASE IV.—L. J. E., a white man, aged sixty-five. The patient was first seen on September 11, 1939. He gave a history of at least thirty years of attacks of nausea, considerable spitting and clearing of his throat in the morning, halitosis, frequent dull headaches, weakness, and general debility. Examination revealed ulceration at several points on the turbinates, dull red dry mucous membrane, and in the throat chronic irritation of the anterior and posterior pillars, as well as very tenacious mucoid discharge hanging postnasally. Diagnosis: chronic dripping sinuses of many years' duration.

Treatment: Three drops of colloidal calcium gelatinate were instilled in each nostril every two to three hours during the first week; on the third day the patient was less annoyed by the symptoms. A tingling

and burning sensation in the frontal sinuses was rather acute during the first three days, but was much less noticeable at the end of the week. After ten days, four or five drops were used just three times a day, and at the end of ninety days a physical examination revealed a relatively normal condition throughout.

CASE V.—J. G., a white woman, aged twenty-three. The patient was first seen on September 19, 1937. She gave a history of chronic pansinusitis for the past three years, with prolonged periods of headache, sometimes extremely acute, marked watering of the eyes, and blurring of vision which interfered with school work. She found it necessary to exert greater effort at all tasks and the results were less satisfactory. Examination revealed excessive mucous membrane in the left nostril, and practically complete closure of the nose on that side. The inferior turbinate of the right nostril showed marked enlargement, and a small deep ragged ulcer was present posterior to the inferior margin. The mucous membrane was dull and sticky and a thick discharge was present. The throat was essentially negative except for a postnasal drip. Diagnosis: chronic dripping sinusitis.

Treatment: The left side of the nose was opened with isotonic ephedrine solution and then both sides of the nose were carefully irrigated with colloidal calcium gelatinate. It was necessary to repeat the operation for two or three days thereafter, and four or five drops of colloidal calcium gelatinate were instilled in each side of the head for a week. The following week the drops were used every four hours, and the use of three to four drops three or four times a day was continued for the next eight weeks. At that time an examination revealed a relatively normal appearing structure and mucous membrane, and no symptoms, even occasionally, were noted after the first nine months. The patient always uses drops for a few days following a cold. Head colds occur far less frequently than in her past history.

Factors to Be Considered in Treatment

In another paper on colloidal calcium gelatinate and its use in hay fever, I mentioned that it is impossible to spray this medication; however, it may be used in an irrigator most successfully. Irrigation is usually carried out after the method of Proetz with which all doctors employing such methods are thoroughly familiar. The patient usually takes drops home to be used. At home, the patient should recline on a table or bed with the head well back over the edge. The dropper is then placed in the upper part of the nose, i.e., toward the forehead, and three or four drops of the solution permitted to enter into one side of the nose at a time. If properly administered there usually will be a burning, stinging sensation in the front of the head within a few seconds. When this occurs the patient should sit up and lean as far forward as possible, thus permitting the medication to pass over an entirely different sinus area. However, should this reaction fail to appear it does not necessarily mean that the medication is not effective. The solution should be applied to each nostril three or four times daily.

There are naturally several additional factors which must be considered, particularly in the early treatment. These include obstructions, such as hypertrophic mucous membrane or deformity, deviation of the septum,

overgrowth due to injury or additional trigger area tissue such as polyps. In these cases, Proetz irrigation, as mentioned above, is first instituted and in some instances one-fourth to one-half percent ephedrine in aqueous solution may be employed to hasten the time when irrigation may be done properly.

Comment

1. There is reason to believe over fifty percent of chronic sinus conditions have a certain allergic background. Therefore colloidal calcium gelatinate, though originally used for hay fever, would not seem unreasonable in the treatment of chronic sinusitis.

2. Sinus irrigation is an acceptable type of treatment for chronic sinusitis, and the chemistry is such that it in no way seems to depress the cilia, which in my opinion, and those of my co-workers, is worthy of mention. It is our belief that the cilia are activated, thus accounting for rather rapid improvement in many cases.

3. Normal secretions vary from definitely acid through neutral, to alkaline in some cases. In the presence of infection the secretions are slightly acid or alkaline. In some manner colloidal calcium gelatinate is an additional factor, reacting with the irritant or irritative secretions, ulcerations, etc., promoting and encouraging healing, and seemingly reduces chemical trauma, so common in acute and chronic infections.

4. It is interesting to note that the mode of action may be: (a), protective; (b), secretion adjusting power, possibly due to supplying material necessary but not sufficient in amount in the existing condition to enable proper healing to occur.

5. Colloidal calcium gelatinate is unusually adaptable to the treatment of children, first, because of its low toxicity, and second, because it is nonirritating. No doubt one has had frequent unpleasant experiences with products containing phenol, hypertonic salines, excessive ephedrine, and too much narcotics in children. On account of the limited armamentarium for nose and throat work found in the general practitioner's office, the notable difficulty encountered in getting children to remain quiet in a treatment chair during instrumental techniques, and the fact that a relatively painless means of medication is needed for those too often neglected cases, the colloidal calcium gelatinate treatment affords a most helpful procedure.

Conclusion

Inasmuch as this method of treatment has now been effectively used for the past five years by myself and several of my confrères in the Mid-West, this paper is presented as a means, primarily for busy general practitioners elsewhere, of aiding in the reduction of chronic nasal sinusitis and its related upper respiratory disorders.

ALLERGY AND INFECTION OF THE NOSE AND THE PARANASAL SINUSES

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Observations on the cytology of the nasal secretions in allergy have shown that the patient who has chronic manifestations of allergy in the nose and paranasal sinuses is subject to repeated attacks of acute infection. There is, however, a great difference in individual patients; some rarely suffer from acute infections, while others are frequently affected, especially during the winter months. The observation has been made that during the periods of acute exacerbation of allergy, reactions in the nose may be so marked that the nasal passages become obstructed with the accumulation of secretions; consequently, with the interference with normal ciliary action, mild acute infection rapidly takes place, as indicated by the presence of a large number of neutrophils in the nasal secretions during these attacks. It is evident, therefore, that in a great many of these cases the infectious process must play an important part in producing a certain amount of permanent change in the tissues as a result of repeated acute inflammatory reactions.

As a result of chronic superimposed infection upon an allergic process, certain characteristic changes are induced which represent a combination of the histopathological picture of allergy and chronic inflammation of the infectious type. The relative degree of allergic and inflammatory changes may vary in individual cases and even in parts of individual specimens. In one instance, the pathological picture of allergy may be the characteristic feature with only mild changes of the inflammatory type. In other instances,

the two processes may be present in approximately equal proportions. In still other cases, the inflammatory process may greatly predominate the histological picture so that the allergic process appears difficult to distinguish. It is possible that in certain cases the inflammatory process may completely obstruct the picture of allergy. Even in parts of an individual specimen of tissue, as in a polyp, for example, the changes in the individual structures, such as the epithelium, the basement membrane and the subepithelial structures may show considerable variation in the nature of the pathological picture. In one area the epithelium may appear almost normal; in other areas it may be markedly hyperplastic. The basement membrane may be absent or slightly thickened in one area and markedly thickened in another. In the subepithelial layer, edema and eosinophilic infiltration may be marked in one area and in another area there may be less edema and a great deal of fibrosis and cellular infiltration of all types. Localized abscess formation may be noted. The changes in the blood vessels may vary according to the surrounding perivascular infiltration and fibrosis. The glands may appear dilated or cystic in edematous areas and atrophic, compressed, or fibrotic where the fibrosis is marked. Depending upon the degree of inflammation, the cellular elements concerned in repair, such as the monocytes, histiocytes, and fibroblasts are evident. Changes in the periosteum and the bone vary according to the degrees of inflammatory change in the soft tissue and according to the

virulence of invading organisms. It is apparent, therefore, that all of the above mentioned types of changes may be present.

From a review of all these histopathological changes in allergy, in infection, and in allergy and infection, it is apparent that certain difficulties may arise in individual cases in establishing an exact diagnosis on the basis of the histopathology. The changes which are present in the tissues represent not only present reactions, but also evidence of permanent changes which have resulted from past reactions in the tissue. If it were possible to obtain an accurate, chronological history of what has actually happened in the tissues from time to time, it would be easy to evaluate the histopathological changes. Long continued observation of the patient with detailed clinical history and laboratory examinations, including repeated determinations of the cytology of the nasal secretions, are often necessary to determine the nature of the pathological processes in the paranasal sinuses.

Allergic subjects show characteristic responses to infection so far as the reaction of the tissues is concerned. The observation has been made that in persons who are subject to seasonal hay fever, an acute infection occurring at the end of or outside the hay fever season may produce inflammatory reactions which are more pronounced and severe than those seen in the normal person. There is a great tendency to the occurrence of pronounced inflammatory edema, even reaching the stage of acute polyp formation. The occurrence of these changes may be illustrated by the following case which was recently under observation.

Case Histories

The patient, a man, aged sixty-two, gave a history of having had an acute nasal exacerbation with sneezing and profuse discharge of ten days' duration. Examination of the nose showed a rather pale mucous membrane with a moderately large polyp in each middle meatus, arising from the region of the bulla. The symptoms, the appearance of the nasal mucosa, and the profuse mucus-like discharge suggested an acute allergic exacerbation, but microscopic examination of the secretions showed a large number of neutrophils and no eosinophiles. Two years previously the patient stated that he had had a similar attack which lasted about six weeks. His past history revealed that for many years previous to ten years ago he had had perennial nasal manifestations of allergy from which he entirely recovered. Under local treatment, the inflammatory process subsided, and after a period of several weeks the edematous polyps completely disappeared.

In another patient, a similar occurrence was noted. This patient had perennial asthma for a number of years, accompanied by active symptoms of allergy. She recovered from her asthma and nasal symptoms and had been symptom-free for several years. Recently, she was seen with an acute exacerbation, characterized by sneezing, profuse mucous discharge, pale membrane and acute edematous polyps in each middle meatus. The cytology of the secretion indicated an acute infection. After local treatment, the infection subsided and the edematous swellings disappeared.

These cases illustrate the marked degree of inflammatory reactivity which may occur in the nasal

mucous membrane in patients who have had an allergy and who have apparently recovered from it. It is highly probable that in many of the cases of frank suppuration of the paranasal sinuses with polyposis, there may be an allergic background in the patient to account for the marked inflammatory reactions in the tissues. This is illustrated by the following case.

The patient, a man, aged thirty-eight, gave a history of having had grass hay fever during the months of May and June for many years, with no apparent symptoms at other times during the year. One year ago, in the winter, he developed a severe acute upper respiratory infection which resulted in a chronic suppurative pansinusitis on both sides of the nose. The nasal examination showed extensive polyposis in each middle meatus and the microscopic examination showed the polyps to be the fibroedematous inflammatory type. There was a marked discharge of thick pus from both sides of the nose, but mixed with it there was a great deal of clear mucus, indicating an excessive activity of the mucous glands. As a rule, this is not present in the ordinary case of chronic suppurative paranasal sinusitis, especially in the fibrous type. Within three or four months of the onset of the suppurative process, the polyps had become quite well developed.

The nasal secretions repeatedly showed a marked, neutrophilic response with only a few eosinophiles. In this particular case, there was apparently no active allergic process. It illustrates, however, the marked inflammatory changes which may occur as the result of suppuration in an individual who has previously had the nasal manifestations of allergy or who is subject to seasonal hay fever.

As pointed out by Kern and Scheneck, cases of polyps of the typical allergic type may be seen without the usual active symptoms, and microscopically there may be little if any eosinophilic infiltration.

These persons, however, usually give a history of having had previous active allergic nasal reactions. It is perfectly possible, therefore, for a patient with active nasal allergy and polyposis to become entirely free of active symptoms and yet retain the nasal polyps. While in many of these cases there is no evidence of suppuration, in others a chronic suppurative process may follow a severe infection.

It is logical also that many cases of the mixed type of sinusitis may not be the result of a bacterial element superimposed upon an allergic sinusitis, but on the contrary may be an allergic involvement following attacks of acute infection, wherein the tissues of the nose and sinuses may become sensitive to allergins. Thus through repeated inflammatory attacks, the resistance normally possessed by the mucous membrane of the nose and sinuses, may be lessened, rendering it more sensitive to extraneous matter such as the inhalant allergins.

It has been demonstrated that the mucous membrane of the nose and sinuses has a natural resistance to both bacterial and allergic assaults. That the ciliary action within the sinuses is toward the ostia, and the action of the cilia within the nose is normally toward the pharynx, and that this action is protective.

The mucous coating of the sinuses and nasal passages supplied by the mucous glands, together with the fluid secretions provided by the erectile tissue of the turbinates, has a protective action also.

Estimates of the amount of fluid given off by the mucous membrane varies from one quart (Proetz) to two quarts (Foster) per twenty-four hour period in the normal nose.

Differential Diagnosis

The successful treatment of sinusitis depends upon an accurate differential diagnosis. Emphasis should be placed upon the clinical findings, substantiated if possible by laboratory and radiographic reports. It should be borne in mind that repeated cytological examinations of nasal secretions may be necessary before a positive eosinophilia may be demonstrated.

Likewise, one should bear in mind that in an uninfected allergic sinusitis, radiograms are negative, even though the sinuses may be filled with secretions, while in the bacterial type the sinuses show cloudiness consistent with the amount of empyema present. The same is true in transillumination of a suspected sinus. The history of the case, together with the clinical findings are, therefore, of prime importance in determining the kind of sinusitis being studied.

In a true allergic sinusitis the mucous membrane of the nose is thickened, boggy or waterlogged in appearance, is pale pink in color, and covered with watery, clear, sticky secretions. Severe pain is not often complained of, but sneezing and difficulty in breathing are common. The patient will usually say that when he reclines one side of his nose is open and the other is closed, and that when he turns over, the formerly closed side opens, and the open side closes. He may also say that when he inclines his head forward thin, clear, hot water flows from his nose. In many cases there is a history of hay fever attacks, of asthma, or both. Others may give a history of urticaria, contact dermatitis or angioneurotic edema, all of which helps to build up the diagnosis of allergic sinusitis.

Polyps in the middle meatus and within the sinuses are quite common in chronic allergic sinusitis.

Inspection of the nasal membrane in the mixed type or in the true bacterial type will show a bright red mucous membrane, which may or may not be thickened over the turbinates, depending upon the length of time the infection has existed. Pus is usually found in the middle meatus near the anterior end of the middle turbinate. Transillumination and radiographic examination show cloudiness in the affected sinus or sinuses.

Pain, in varying degrees of severity, is generally present in the region of the infected sinus, depending upon the amount of pressure from confined pus and swollen mucous membrane within the sinus.

Microscopic examination of the nasal secretions and of the blood will show a predominating number of neutrophils.

In those cases wherein a bacterial invasion has been superimposed upon an allergic sinusitis, the case history is of prime importance in making a diagnosis. This type of sinusitis is much more common than we suspect. Close questioning of the patient will disclose a history of allergy in varying degree. A nasal mucous membrane, sensitive to allergins, becomes a fertile field for bacterial invasion.

If a patient gives a history of possible allergy and frequent recurrent attacks of rhinitis or sinusitis the

case should be suspected of being a mixed type. The cytology of the nasal secretions in the mixed type may be misleading. The neutrophils usually push the eosinophiles out of the picture, until such time as the bacterial invasion may be gotten under control, whereupon the eosinophiles reappear while the neutrophils diminish in number.

In the allergic type of sinusitis the patient should be closely questioned as to the foods he most frequently eats, and the pollens and other inhalants that he usually comes in contact with. A careful scratch test or intradermal test is then made of all suspected inhalants and ingestants, always including dust and fungi. In cases where food is found to give a positive reaction, the offending food is eliminated from the diet. The inhalants giving the most positive reaction are made into an antigen, remembering that the fewer the allergins incorporated in the antigen, the more efficacious the antigen will be. This is administered subcutaneously, under accurate dosage at biweekly intervals, with due regard to possible shock.

Treatment

Surgical procedures in the nose and sinuses should be avoided whenever possible, with one exception—nasal polyps should be removed. This rule applies only to true allergic sinusitis cases. Palliative local treatments with argyrol-glycerine packs are beneficial, and should be used.

In the mixed type of sinusitis, one should resort to palliative local treatments until the bacterial element is eliminated, which occurs within a few days as a rule, and then proceed as in a case of true allergic sinusitis. In the mixed type and in the bacterial type the enteral use of sulfathiazole greatly facilitates the eradication of the bacterial element.

In the true bacterial type of sinusitis, surgery may be resorted to if palliative local treatment and the internal use of sulfathiazole fails to relieve the patient. It is needless to say that conservative treatment is always indicated, surgery being used as a last resort.

Diathermy, infrared and ultraviolet radiations are useful in the reduction of nasal and sinus congestion, and in the alleviation of pain. The local use of the sulfa drugs is contraindicated since it has a paralytic effect upon the cilia.

The prolonged use of ephedrine solutions and adrenalin are also contraindicated for the same reason. Local tampons of five percent argyrol in glycerine, plus the physical measures mentioned above, usually give relief and have no objectionable features.

Sinus probing is mentioned only to be condemned. Several years ago, Prof. Hajek of Vienna gave the following advice, regarding probing of the frontal sinus: "Stay out of the frontal sinus, unless the patient shows symptoms of meningitis or of bony necrosis."

When obstruction of the nasal passages is due to deviation of the septum and to nasal spurs, then a resection of the cartilaginous portion and the removal of the nasal spurs are justifiable. The same holds true when a middle turbinate is cystic or contains a cell. In the latter case the cell may be crushed and the turbinate dislocated away from the lateral wall of the nose thus freeing the ostia and facilitating drainage and aeration.

A more radical operation upon the sinuses should be performed only in those cases in which no favorable results have been obtained by simpler and more conservative methods.

Conclusion

Numerous cases of allergic sinusitis are to be found among the sinus cases that come for treatment. In order properly to treat these cases, we must first

determine that they are allergic and not bacterial in nature. Allergic sinusitis is treated differently from the bacterial or inflammatory type. Surgery is contraindicated as a rule, in the majority of allergic cases, except as mentioned previously. Palliative local treatment, plus the administration of the proper antigen, will assure us of a fair promise of success in the treatment of allergic sinusitis.

817 MEDICAL PROFESSIONAL BUILDING

CURARE*

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The recent demand for curare for the treatment of spastic and dystonic states must be evaluated in the light of the newer knowledge of the drug. Curare, the arrow poison of the South American natives, has been known by the medical world since the explorations of Sir Walter Raleigh in the sixteenth century. Curare is really a group of substances known as curare, curara, woorara, urari, and woorali prepared by extracting the bark of the plants of the genus *Strychnos*. Together they constitute a group of alkaloids whose physiological action, as shown by Claude Bernard, consists of arrest of all voluntary movements through interruption of the connections between peripheral nerves and the striated muscle fibres. Death results when the heart fails from asphyxia. The biochemical action most probably occurs at the myoneural junction, and probably results from the inhibition of the action of choline esterase (8).

Curare acts first on the nerves of the toes, ear and eye, and then the limbs, head and neck, and finally on the muscles of respiration. Small doses do not affect the innervation of smooth muscle. Large doses paralyze the autonomic sympathetic ganglia. Curare is excreted by the kidneys apparently unchanged. It may be swallowed with impunity, providing there is no wounded surface in the mouth or throat. Cobra venom and the toxin of botulism have the same point of action as curare, that is, at the myoneural junction.

The muscular paralysis produced by curare early suggested its use as a therapeutic agent in convulsive conditions, such as tetanus, tetany, strychnine poisoning, etc. The crux of the matter lay in the answer to the question, "Can an adequate degree of muscular relaxation be achieved without arrest of respiration?" Therapeutic experiments have been hampered by difficulty in obtaining reliable preparations of curare or its active principles. A quick survey of therapeutic experiments reveals that Bremer and others have shown that curare produces a selective action on nerve endings, affecting those which are continuously in action more readily than those which are resting. Hartridge and West used curare to reduce muscular rigidity in diseases of the pyramidal and extrapyramidal motor systems. West himself treated ten cases of tetanus with intravenous curarine with some beneficial effects (12). Shortly thereafter the prophecy was made that if the active principles of curare could be obtained, and their dosage determined, curare might yet be used for the

treatment of conditions of spasm and rigidity of voluntary muscles (6).

An interesting application of curare in preventing traumatic complications in convulsive shock therapy was attempted by Bennett (1). He found that aqueous or alcoholic extracts of curare given parenterally in physiological dosage sufficient to produce flaccid paralysis protected patients from traumatic complications of convulsive shock therapy. According to his method, infusion or alcoholic extract of crude curare is prepared and the smallest lethal dose per kgm. for mice is determined. About one-tenth the lethal dose per kgm. is the beginning dose for human beings. The drug is sterilized and then given slowly intravenously or intramuscularly. The active physiological reaction of curarization is noted at one-quarter to one-half the estimated lethal dosage.

A year later Bennett (2) again reported on the use of curare. This time he specifically stated that an aqueous infusion or hot alcoholic extract of the drug was thermostabile and was not destroyed by autoclaving. He also reported a new method of assay, the head-drop method of Holady in the rabbit. By this method, the curare solution is injected slowly into the ear vein of the rabbit. The dose is adjusted so that the neck muscles after two and one-half to three minutes reach a degree of flaccidity which prevents the animal from raising its head. The amount per kilogram necessary to produce this result is estimated, and the dosage figured according to body weight of the patient. An aqueous solution of intocostin (Squibb) is standardized and contains ten mgm. of curarizing substance per cc. The total dose is given in one to two minutes; one cc. curarizes fifteen to twenty pounds of body weight; five to eight cc. is enough for a 100 to 150 pound female and eight to twelve cc. for a 150 to 200 pound male.

Goodman and Gilman (7) have abstracted the report of Burman who reported nineteen patients with spastic paralysis and several with musculorum deformans treated with curare. The dosage employed was ten to forty mgm. intramuscularly or twenty-two to twenty-five mgm. intravenously. The drug was excreted within two hours, but peculiarly enough the beneficial effect lasted one to two days. Injections were given three times weekly. The effect was immediate after intravenous administration, and within twenty to thirty minutes after intramuscular injection. Only spastic muscles are affected by doses of this magnitude. Re-

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peated therapy gave no harmful effects and the tolerance did not develop.

Erythroidine hydrochloride was used as a substitute for curare. This is supposedly more active, less toxic, safer, and more easily prepared and assayed than curare. The dose is larger than for curare; however, only small amounts are available.

Because of the optimistic tone of this abstract, Burman's original articles were consulted. In 1939 Burman (3) reached the conclusion that properly assayed curare is safe if given in therapeutically effective doses of ten to forty mgm. intramuscularly, or about twenty-five mgm. intravenously. It releases spasm by elective affinity for the hyperinnervated myoneural junction. It cannot convert a paralyzed muscle into an active one, but a partially paralyzed muscle may begin to function actively with the use of curare. Simple orthopedic operations and continuous training of the muscles must be used in conjunction with curare.

In 1940 Burman (4) again reported on his clinical experiences with some curare preparations and curare substitutes. According to his findings, Brazilian curare from the *Strychnos* group and the *Erythrina* curare are the only ones suitable for therapeutic purposes. Chazuta curare from Peru is not suitable. Therapeutic curare given intravenously first acts on muscles supplied by cranial nerves, then on skeletal muscles, and finally on muscles of respiration. A curare is unsuitable for human therapy if the margin between the effect on skeletal muscles and the effect on the muscles of respiration is small. If erythroidine hydrochloride is employed, one thousand mgm. is given by mouth; as much as three thousand mgm. in orange juice has been used. Cobra venom was used in one patient, a girl with painful muscle spasm. This lessened the pain and reduced the spasm, but its repetition over a long period of time proved the drug ineffective in the usual dosage recommended.

These optimistic reports created an unprecedented demand for therapeutic curare in the face of a dwindling supply because of the war. Studies were immediately begun on synthetic curare-like compounds. Chase and Lehman (5) soon reported that beta-erythroidine hydrochloride and dihydro-beta-erythroidine hydrobromide are effective neuromuscular paralyzants. The latter is five time more potent than the former. Lehman, Chase, and Yonkman (10) tested many more synthetic curare-like agents and finally found four which could possibly be used for human therapeutics. The first of these was quinine ethochloride dihydrate. The dose recommended was 8.5 mgm. per kg. of body weight. In this dosage this drug had the greatest latitude of safety for the four compounds tested. Quinine methochloride dihydrate at 10 mgm. per kgm. was the least active but had the most prolonged curare-like action. Dihydro-beta-erythroidine hydrobromide was the most potent synthetic curare-like drug produced. The dosage for this substance was 0.75 mgm. per kgm.; but even so this drug was too toxic for general use. Beta-erythroidine hydrochloride at 4 mgm. per kgm. was only one-fifth as toxic as dihydro-beta-erythroidine hydrobromine but still too toxic for general use.

Following the previous optimistic reports, Harvey and Masland (9) reevaluated the actions of curarizing preparations. Their experiments proved that the stage of marked bulbar signs with only moderate involve-

ment of the general bodily musculature might be reached as follows:

With quinine methochloride: With eight to twelve mgm. per kgm. over a period of five minutes.

With erythroidine: With fifteen to seventeen mgm per kgm. over a period of five minutes.

With curare: With one to two mgm per kgm. over a period of two minutes.

Curarizing substances, they find, are really not beneficial in the treatment of spastic patients. These drugs given intravenously result in disturbing bulbar palsy with only slight relief of spasticity. Some patients obtain subjective, but no objective relief. It must be remembered that spastic patients are extremely suggestible. Evaluation of the effectiveness of any of these preparations must be based on objective evidence only. These same investigators used electromyograms, electroencephalograms, and objective clinical observations.

The electromyograms showed that the three preparations used had the same action on the neuromuscular junction. All three produced a characteristic clinical picture. Mental disturbances with confusion and disorientation occasionally occurred with erythroidine and quinine methochloride. There were no detectable changes in the electroencephalogram, however. Minor circulatory changes had been observed, and were more severe with quinine methochloride and erythroidine than with curare. Quinine methochloride also produced backache, abdominal cramps, faintness, and nausea, and diarrhea and vomiting one-half hour after injection. The relief of the spasticity was slight and of brief duration, and did not appear until there was considerable weakness of extraocular, facial, and pharyngeal muscle.

Edward Press (11) reported that quinine methochloride by mouth tried on six spastic children in increasing doses until desirable results were obtained did not give a curarizing effect. There was no evidence that quinine methochloride had a beneficial effect on any of the children in contrast to the favorable influence of a preparation of curare on the same children. The unfavorable effects of quinine methochloride were malaise, lethargy, inertia, nausea and vomiting, diarrhea, and ringing in the ears.

The pessimistic note of these last reports need not necessarily be interpreted as a permanent bar to the use of curare or curare-like substances in the treatment of spastic paralysis. The search must and probably will go on for a synthetic curare-like drug or a readily available natural curare, which can be given preferably by mouth in doses which will prove nontoxic and long acting. This drug must have selective affinity for the hyperinnervated muscle in the dosages mentioned, and it must be generally free of undesirable side effects. Moreover, there must be a wide margin between the effect on the general skeletal musculature and the effect on the muscles of respiration, as well as freedom from producing bulbar palsy in therapeutic doses. Such a preparation would be of inestimable value as a therapeutic adjunct in the treatment of spastic paralysis and musculorum deformans.

As yet such a compound has not been reported. The widespread use of curare or its synthetic substitutes is not yet justified for the following reasons: 1. These compounds have not been standardized to a sufficient degree for general clinical use. 2. There are too many

undesirable side effects. 3. All clinical observations have not been objective enough since there have been no measurements of muscle power, of extensibility of joints, or of chronaxia. 4. Control groups have not been sufficiently well-established, and too few cases have been tested. 5. The data in the literature are too inconsistent.

Conclusion

Further studies of curare and its substitutes should be made on spastic children in the youngest age groups. Older children may have irreversible contractures. Control groups must be well-established, and clinical observations should include actual physical measurements of muscle power, of extensibility of joints in actual degrees, of chronaxia. Electromyograms should be further employed in the evaluation of this drug before its widespread clinical effectiveness is appraised.

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INFLUENZA—THE NUMBER TWO CONCERN OF THE MEDICAL PROFESSION

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The first World War is identified with three outstanding events; the Allies won the war, the Germans won the peace, and the world became poorer by losing twenty-one million lives as a result of an influenza epidemic which encircled the globe in 1918. To be exact, this represents five times the number of persons killed in that war. Judging by recent happenings, history repeats itself, but where epidemics of disease are concerned, the medical profession mobilizes its scientific resources against such eventualities. We emerge from these misfortunes sadder but wiser, only after paying a terrible price for these experiences. To the uninitiated it would seem that the medical profession did little to curb this unruly epidemic which struck down so many lives in so many places in such a short space of time. However, the scientists did not mark time altogether, but from the lava of the explosive volcano of this holocaust they gathered the necessary data to pursue their research. Scientific workers were busy finding out the cause of this *blitzkreig* malady, and seeking a remedy which would immunize the people against this scourge.

The lull following the epidemic squall was broken when three British scientists, Smith, Andrewes and Laidlaw, working for the Rockefeller Foundation, in 1933 informed the world that influenza was not caused by a germ, as first believed, but by a filter passing virus, detectable only by the super electromicroscope, which magnifies forty-five thousand times. This theory stood the critical test and helped to sweep away many hoary misconceptions regarding the cause of influenza which had existed for a long time. With the causative factor of virus influenza established, the next thing was to prove the soundness of the theory.

It was found that the sharp eyed and sharp clawed ferret (polecat) was the animal best adapted for such experiments. Aside from being inexpensive, when it became infected with the virus it developed reactions which resembled those of a human being when stricken with influenza.

With these questions settled, the saga of the influenza romance began making history. The experimentalists first took nose and throat washings from patients who had recovered from influenza, and inoculated the ferrets by the instillation of drops of toxin through the nose. In a few days, these polecats developed discharges from their eyes and noses, with temperature, lassitude and extreme prostration. Encouraged by these developments, they carried on the work further. They placed a number of ferrets sick with the flu in a metal cage, and then introduced a few healthy ferrets. In a few days, as was expected, the healthy ferrets developed symptoms of a typical influenza, proving another point—that the disease is highly contagious and can be spread by contact.

Mildred F. and William W. Wells, of Philadelphia, were long of the opinion that coughing and sneezing helped to disseminate the spray of fine particles containing the virus, which remain vital in the air for many hours, and which they referred to as "droplet nuclei". They contended that these are of greater danger than the coarse particles, for they combine with particles of dust, and are thus inhaled. Taking their cue from these two Philadelphia scientists, C. H. Andrewes and R. E. Glover, under the auspices of the National Institute for Medical Research, in London, began an investigation of virus transmission through the air. These experiments were to supply the long

awaited answer that infection can be transmitted from one animal to another. The doctors built thirty-two separate cubicles, roughly six by five by nine feet in size. They took a normal ferret and placed him in one of these cubicles with one infected with influenza virus. When the second ferret became ill with influenza, they removed the first ferret and introduced a third normal ferret, which in turn took sick and became a potential virus carrier for the succeeding one. Thus the chain of infection was established, and virus transmissions through the air could have been kept up indefinitely. The experiment was a scientific success.

The next thing which bothered the scientists was to find out at what distance a ferret could be infected. In cases where the normal and infected ferrets were placed in adjacent cages, nothing of any consequence happened. They were then placed in cages which were equipped with open meshes instead of closed doors, and the investigators watched the results. In a few days, the healthy animals took sick, although the strain of the poison was not so strong. The inference to be drawn from this experiment was that wherever good ventilation existed, the infective particles in the air were diluted, and the animal would get a milder dose of the infection. The aerial transmission of the virus could take place at a distance as great as five feet.

John B. Sarracino and Malcolm H. Soule, of the Hygienic Laboratory of the University of Michigan, studied the effects of heat, cold, fatigue and alcohol on the resistance of mice to human influenza virus. Their observations were that mice which were exposed to heat were more susceptible to influenza than those which were doused with cold water. The animals, which had become fatigued on a slowly revolving treadmill, had their susceptibility heightened to influenza. They also found that alcoholism in mice, as in humans, lowered their resistance to influenza virus.

The questions of influenza contagion and infection solved, the next phase of the problem which engaged the attention of the medical men was to prepare a vaccine which would first immunize animals against influenza. Frank L. Horsfall, Jr., and Edwin H. Lennette, of the Rockefeller Foundation, pooled their endeavors in developing a vaccine which, if successful in the polecats, could ultimately be used in vaccinating mass populations. They inoculated intranasally four normal ferrets with a strain of epidemic influenza which was obtained from the influenza epidemic of 1939. These tested animals showed symptoms resembling epidemic influenza, and during their convalescence one of the group developed distemper and died. The dead ferret was autopsied, and from its lungs and spleen a vaccine was made which was used on another group of 157 normal ferrets. Following this procedure, these animals were inoculated intranasally with a powerful strain of influenza virus and left to their fate, but the ferrets remained undisturbed. This favorable outcome suggested that the injection made from the ferret which died of distemper contained enough immune bodies to protect these animals against influenza. However, the drawback was that these immune bodies were short lived. When the period of immunity expired, the same ferrets were reinfected with nose and throat washings taken from highly

toxic influenza patients. Although they had a stormy convalescence, all of the ferrets recovered. A highlight in these experiments was that the animals were not only protected against influenza virus by vaccine, but also against ferret distemper, demonstrating that certain virus strains can cause either distemper or influenza in animals. When the same animals were inoculated with distemper virus from a larger animal, such as a dog, the immunity bodies were very much on the job to protect these animals. This vaccine was also tested on a small group of human volunteers, and it was found successful.

The four horsemen, Horsfall, Lennette, Richard and Hirst, encouraged by the successful use of vaccine in animals, thought they could prepare a vaccine which would successfully immunize human beings. A complex vaccine was made and tried in 1450 influenza cases in ten separate institutions. In 967 cases, or 66.7 percent, the exact virus strain was called. The inference was that three different virus strains exist, which, for convenience, were designated as A, B and C. These terms are still used, although about one hundred influenza strains have been uncovered. A few enlightening facts were culled from this mass experiment. When a patient was injected with an A virus vaccine, he received immunity against influenza of the A strain, but that did not exempt him from the B strain. However, when a patient is infected with a strain other than the one against which he has been vaccinated, he may get the influenza of another strain. But this much can be expected from the vaccination, he will not receive the full impact of the virus infection, and will, in the pugilistic language "roll with the punch", and make a recovery. The case usually turns out to be of moderate severity.

Marked differences were known to exist in the proportion of cases studied, which were caused by one or more of the two known viruses in the various institutions in the same states during a single epidemic. In the state of Alabama alone, seven institutional outbreaks were studied; sixty-seven percent were of the A variety and the remaining percentage was made up of B and the intermediate type, which is now called the C virus. Since 1918, investigators have cleared up many angles of the problem not previously understood. The epidemic of twenty years ago was at first mild, then in a few months became more toxic, and finally, in the spring of 1919, the epidemic gradually lost its punch, proving that various strains of influenza abounded which accounted for the different patterns of behavior of epidemics.

The American Institute of Public Opinion, headed by George Gallup, undertook the difficult task of studying the epidemic of influenza in 1940. During the first ten weeks of that year, a half million mild influenza cases developed in this country. Although this was considered a mild epidemic, the time lost in illness and reduction of physical efficiency amounted to no fewer than sixty million days. This was more than the United States Public Health figures. The Institute explained this discrepancy by pointing out that a number of the sick persons did not call a doctor, and to the difference in state health regulations where physicians did not report the illnesses of their patients. From a composite study of the Gallup poll, one fourth of the adult population suffered from in-

fluenza, which puts the figure at approximately twenty million adults. This does not include patients under twenty-one years of age. It was interesting to read in the report of the "flu" for that year that no section of the country was spared. Small towns were more affected than larger cities, due to faulty heating and ventilation, with the Southern states leading with dilapidated and outmoded homes. The irrepressible athlete is an easy prey compared to elderly persons, who are more conservative in behavior. The Southern states contribute the greatest number of influenza cases, with the New England states running in close competition.

When all this is computed into actual days lost, we have a total of 161,644 years lost, which makes quite a dent in the armor of our defense program, considering that time is now an urgent factor. The report showed also that influenza is more prevalent among women, which can be ascribed to the fact that women are less active than men, and partly to the feminine willingness to sacrifice health for fads and fashion.

The ultramicroscopic virus which causes influenza finds a favorable habitat in the upper air passages, particularly the nose and throat. The virus, once it attacks the patient, moves with lightning rapidity, leaving on contact tracks of destruction, and preparing the tissues for other germs known as secondary invaders. This explains why influenza is a disease of many complications, such as sinus disorders, ear infection and pneumonia. This fast moving action of the virus and germs is comparable to the attack of a Stuka bomber, which clears the road for the tanks and infantry to do the mopping up operation.

While any experienced physician can recognize influenza in adults, it is a little confusing to diagnose infantile influenza with certainty. Dr. Ernest Wolf, San Francisco, reporting on his experience with children ill with influenza, notes the presence of red spots, pinhead in size, around the lining of the mouth, particularly in the soft parts indented by the teeth. Once measles is ruled out, these spots are significant of influenza. The diagnostic sign is of particular value when it becomes necessary to differentiate between a case of influenza with a gastric upset and an abdominal condition such as appendicitis.

Physicians as a whole have been endeavoring to establish a vaccine which would confer a lasting immunity against influenza. Numerous preventive methods have been tried by the medical profession, and among them the following are of interest.

A. A. Smorodinzew and his collaborators reported in the *Zeitschrift für klinische Medizin*, Berlin, the results of a technique used on the employees of a department store during a widespread epidemic. The physicians used a finely dispersed serum, which was activated into a spray by an electric device. The material was inhaled through respirators connected with many outlets so that fifteen persons could be given this treatment in one sitting. A group of 501 employees first received this preventive form of treatment. During the influenza epidemic, only four of this group developed a mild form of the disease, or 0.8 percent; whereas in the control group of 1825 employees who did not submit to this treatment, 150 patients developed influenza, or 8.2 percent.

C. K. Hirst and his associates used eleven different vaccines on 150 individuals. The response was different with each type. They concluded that although the vaccine gave immunity from four to six weeks, the patient's resistance dropped to prevaccination level at the end of that period.

M. D. Eaton of the United States Public Health Service selected volunteers between twenty and thirty years of age for his research. He injected them with B vaccine in the left arm and H vaccine in the right arm. When the blood of these patients was examined, it was found that victims who suffered an attack of influenza showed a greater number of immunity bodies than those who were artificially inoculated against influenza.

Many drugs have been called into service as a possible cure for influenza but few have been chosen. E. Neter, of Buffalo, N. Y., reports sixty-two cases of influenza in children where he used a specific rabbit serum, supplemented by sulfanilamide drugs, with encouraging results.

E. E. Menefee, Jr., of Durham, N. C., worked with 227 cases. Of these cases 116 were treated from the viewpoint of symptoms only, such as fever, cough, etc. In the remaining 111 cases he used sulfa drugs, and reports that he was able to cut down the period of illness, as well as convalescence, by fifty percent.

There is a form of brain fever resulting from influenza which every physician approaches with a prayer on his lips. It is prevalent in the impoverished class of children. Admittedly, influenzal meningitis presents scant hopes from the viewpoint of recovery. Knouf, Mitchell and Hamilton made a ten year study in the contagious disease department of a large hospital, from 1931 to 1941. They grouped their cases into four classes. Group 1 consisted of sixty-three patients, who were treated from the viewpoint of symptoms only. Unfortunately none recovered. In group 2, there were nineteen patients who were treated by serum, also all with a fatal outcome. Group 3, consisting of thirteen cases, were treated with serum, combined with sulfa drugs, and only one patient survived. However, in the last group, in which seven were boys and five were girls, treatment consisted of a modification of sulfa drugs (sulfapyridine). The results were gratifying, since nine survived.

Out of a possible fifty strains of influenza which the medical profession has reported, three distinct viruses are recognized by the Rockefeller Foundation, Medical Research Division. As already mentioned, Smith and his coworkers were the first to discover a virus strain which was accountable for influenza epidemics in the past. This is now known as influenza of the A type. About two years ago T. P. Magill and his confrères announced the discovery of another strain, now termed the B type. The latter has been found capable of infecting ferrets, mice and chicken embryos. And finally, the intermediate type recognized as the Y strain, and referred to by some as the C type.

Frank L. Horsfall, Jr., in a lecture before the convention of the American Medical Association in Atlantic City in June 1942, pointed out that all three strains of influenza viruses have been encountered from time to time in one single epidemic. Horsfall cleared up many misconceptions about the immunity

to influenza, from the viewpoint of vaccination. He contends that vaccination with the A strain will not confer immunity for the B or Y strain of influenza. He bases his conclusions on five independent studies, and reminds the medical profession that it is doubtful whether it is possible to prevent, let alone influence, the course of the disease. However, he holds out a ray of encouragement when he states that it is possible for future scientific investigators to perfect a vaccine which will confer immunity. Numerous prophylactic measures have been advanced to curb the incidence of influenza epidemics.

Sterilizing the air in places where large groups of people gather, such as schools, theaters and subways, is being considered now by English and American scientists. They have been using a fine mist of hexyl-resorcinol in propylene glycol, which is an antifreeze chemical. Of course, the efficacy of this would depend upon atmospheric conditions, such as pressure and humidity. However, some artificial lights have been found practical in their limited application. For instance, ultraviolet rays were long known for their virtue in killing germs and viruses. With this information on hand, some hospitals in the presence of an epidemic have installed ultraviolet lamps in operating rooms and wards to cast a shaft of light which will render the invisible germs and viruses impotent. These lamps have caught the imagination of business executives, for they are now installed in some banks over tellers' windows to purify the air and protect the personnel of the banks from the contagion of influenza carried by persons from the outside.

Only two years ago the Surgeon General of the U. S. Army appointed a commission for the investigation and control of epidemics of influenza and other diseases. After a long and painstaking inquiry they compiled a circular letter, No. 124, to be used as a guide in curbing epidemics of influenza and similar outbreaks. Out of the many strains of influenza reported they recognized two, the A and B types. From their experiences they found that the most prevalent form of influenza which attacks the individual is the respiratory or chest type. The protocol prepared by the Surgeon General's office makes the following recommendations. One inflexible rule, whenever there is an outbreak of influenza, is to avoid crowding and congregating of soldiers in the cantonments. Segregation and isolation of patients is immediately put into operation. The rookies are kept apart from the more seasoned soldiers. The transfer of troops by trains or other means of transportation is avoided. This learned body recommends no special method in the treatment of influenza. However, they believe steam inhalations are beneficial, and the intestinal tract must be regulated. Fluids should be given unsparingly. A soft diet is essential to keep up the resistance of the patient. The sick should remain in bed for at least twenty-four hours after the temperature returns to normal. The Army Medical Commission is insistent upon a gradual return of the soldiers to duty, and warns of the possibility of complications such as pneumonia and tuberculosis.

Influenza nearly always has a deceptive beginning. Patients may complain of a slight sore throat and a head cold, and treat the incident lightly. In the course of a few days the same patient will be subjected to

chills, fever and marked prostration. At this stage he will take to bed, complaining that his legs feel like rubber and that he can walk only with the greatest difficulty. Practical minded patients call in a physician and obey rigidly given instructions. In the sick room, social visits should be avoided. A good citizen makes a good patient. His best bedside manners prompt him to cooperate with the health authorities of his community. Such acts as coughing and sneezing are best accomplished by protecting others through the unsparing use of handkerchiefs. The custom of handshaking during and immediately after the illness should be a forgotten art. Active attendants caring for the sick should observe such precautionary measures as wearing a gauze mask, and washing the hands in a mild antiseptic solution.

Only a few years ago it was customary to treat influenza by advising patients to drink plenty of water, but our present knowledge of vitamins cautions against this practice. Physicians now believe that drinking excess water has a tendency to wash out from the system essential vitamins such as B and C, and explains why convalescing influenza patients suffer from a protracted period of exhaustion. Vitamin C is notorious for lack of reserve in the human body. Its intake is a day to day proposition. Therefore, fruit juices should be taken in liberal amounts as the best toxin diluent. Influenza is an enervating and prostrating disease, and the patient will benefit by taking a prolonged rest following an attack. The greatest danger to the community is the period of convalescence, which is the time of greatest contagion and virus transmission.

In war, history repeats itself, but the medical profession will aim to remake history by warring against a return of large size influenza epidemics. The reports regarding the use of influenza vaccination are encouraging, and this safeguard will soon take its place with the successful protective vaccinations against smallpox, diphtheria, typhoid fever and other microscopic enemies of mankind.

The author has found that the administration of cortothylin with vitamin C¹ (a combination of adrenal cortex, thyroid and vitamin C) during and after illness, is efficacious not only in shortening the attack of influenza, but also the period of convalescence. Such treatment is predicated on the well known fact that influenza and similar infections exhaust the adrenals and the thyroid. These hormones have therefore been effectively combined by many clinicians in the treatment of their influenza patients. The discovery that vitamin C is definitely related to infectious processes has put another valuable therapeutic medium in our hands. It has been observed that there is a deficiency of this vitamin during infections, but whether this fact represents a cause or an effect is a matter of opinion. The belief, however, that there is a deficient mechanism for storage of vitamin C in adrenal insufficiency has led to the therapeutic application of adrenal cortex and vitamin C in influenza and other infections—and with considerable success.

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¹Cortothylin with Vitamin C is a product of the Harrower Laboratory, Inc. Each capsule contains Cortinoral (lipid adrenal cortex extract) one-quarter rat unit, Endothylin (thyroglobulin) one-twelfth grain, and ascorbic acid (vitamin C) twenty-five mg. (five hundred units).

Editorials

Postwar Medicine

It seems a bit premature to discuss postwar problems while the war is still going on and we do not know the exact moment of victory. As a matter of fact, planning postwar problems, especially medical, is not jumping the gun, as the machinery, which will put it into operation on a large scale, is being applied in a minor way in places that we occupy, such as North Africa.

There is a beginning realization that the social, economic, and medical problems of the other fellow or the other nation are really our problems as well, this from a selfish angle. As the world becomes smaller, the remote countries become more acutely adjacent, and from a civic point of view our neighbor's backyard is really our concern. If it is not kept tidy and, more so, if the sanitation of his backyard may affect our own health, it is vitally one of our problems. It has always been considered altruistic to be our brother's keeper, but if taken in a wider sense it is just a matter of self-preservation and utter selfishness.

Recently a meeting was held in New York where representatives of the various leading medical societies and members of the pharmaceutical industry got together to consider the problems that have arisen from the war and which will have to be met. Representatives of certain government agencies were present and there seemed to be a unanimity of opinion as to the necessity for an organized and coordinated effort to attempt to solve our own postwar health problems as well as the problems that would arise in countries throughout the world and where, in fact, the problems already exist to a large degree.

It seemed there was every assurance that there would be widespread epidemics due to bad sanitation, lack of nourishment, and lack of medical personnel. Representatives of the Red Cross spoke of the mistakes that had been made in the working out of health problems after the last war and stated that every effort would be made to avoid making the same mistakes again. It was recognized that the scope of the problems after this war would be infinitely greater and far more widespread. While our medical services have been markedly reduced, we still have one physician to 1,500 inhabitants; whereas in European countries, they have one physician to approximately eight thousand or ten thousand inhabitants; and in countries like China, the number of practicing physicians using scientific methods is so small that it is hard to estimate the percentage of physicians to the population. Most physicians are aware of what needs to be done but can do little about

the entire matter unless an organized functioning body is available. However, as in the past, we know they will respond to any move which will better the health and welfare of any group of humans anywhere.

Representatives of the pharmaceutical industry realize the problems that will confront the world and which have begun to make themselves manifest, and we believe that they will be hard pressed to meet the demand for the necessary drugs, but we also feel that the American pharmaceutical industry will meet the situation. Of course, at the meeting which was held at the Waldorf, under the auspices of the Carlos Finlay Institute of the Americas, many points of view were presented and there seemed to be on the surface a lack of a coordinated and central plan; nevertheless, we believe the various points of view, while they were highly individualized, can be brought into a harmonious pattern and made to operate for the good of society in a big way. It may require the setting aside of personal hobbies for the time being, but the task is so important that we can all afford to set our egos in the shadow and work together for a basically worthwhile cause.

The Rat Pest

Of all the pests which menace the human race, the rat is one of the worst. It is especially to be dreaded now, as means for its repression or destruction are much hampered, owing to the exigencies of war, and traffic by land and sea is not so carefully supervised as in peace times. As a carrier of disease in the Far East, this rodent is notoriously the most destructive agent to human beings, but even in temperate climates where there is no rat borne plague it is the cause of some disease and great waste of food.

Rat bite fever is common in Japan, China and Bombay and cases have been reported from France, Italy, Spain, Britain, East Africa, the West Indies, and Australia. Indeed, anyone bitten by an infected rat may acquire the disease. In countries where sanitation, public and domestic, is efficient, rat bite fever is a negligible quantity in times of peace, but in these days, when supervision is necessarily less rigid, it is a danger to be considered. It is a chronic relapsing fever due to the *Spirillum minus*, and characterized clinically by a return of inflammation in the healed wound, lymphangitis, adenitis, rigors, fever and a macular or papular purplish rash.

In temperate climates the menace of the rat is recognized by the amount of food destroyed or its value impaired. This is stupendous, almost incredible, and calls for drastic methods at least to minimize the waste. The rat is a cunning animal and works in the dark, is without redeeming qualities and is in every sense of the word not only useless but an ever present source of danger.

Plague, a deadly disease transmitted to man by rat fleas, may occur anywhere, if conditions are favorable, and is most frequent in subtropical lands. People of any race or sex are susceptible. The plague bacillus was isolated by Yersin in 1894. Rat fleas, especially the *Xenopsylla cheopis*, feed on the blood of infected rodents and inoculate man. Epidemics of plague in rats are precursors of epidemics in humans.

Plague is differentiated clinically into seven types: bubonic, septicemic, pneumonic, intestinal, cerebral, cellulocutaneous, abortive or ambulatory. All forms are deadly except the abortive. Pneumonic and pure septicemic plague are almost invariably fatal. The mortality rate in bubonic plague is much higher in natives than in white men and axillary buboes are more dangerous than inguinal.

On every count the rat may be indicted as perhaps the greatest enemy of mankind. As a carrier and spreader of deadly diseases he leads, and as a destroyer and waster of food he is second to none. The rat in temperate climates has never been pursued to death with the energy his harmfulness has demanded.

It is, to some extent, "out of sight, out of mind". In climates where plague flourishes and where cleanliness and sanitation are at a discount, it is impossible to exterminate an animal which revels in such environment. There is little doubt, however, that if brains and money were expended vigorously, the activities of this dangerous and useless rodent could at least be controlled.

Medicinals in Australia

The chairman of the Medical Equipment Control Committee, Department of Defense, in Australia, has issued an important report on medical supplies. A remarkable fact is the lack of quinine in the Commonwealth. All available supplies of quinine and quinine salts are required by the fighting services. There is a serious shortage of these vital drugs, supplies of which cannot be replenished. The wholesale drug firms have been asked to assist the government by purchasing stocks from pharmacists; the wholesale firms are doing this without any profit, and all stocks collected by them are handed over to the Army. It is illegal to supply quinine or quinine salts or any preparations containing quinine or quinine salts except on a doctor's prescription. Medical men have been urged strongly to prescribe quinine only for malaria.

The development of the Australian drug industry, and the attempts of all concerned to make Australia self-sufficient in medical supplies are interesting. Considerable progress has been made with the extraction of glucosides of digitalis grown locally. Recently Elliotts and Australian Drug Pty. Ltd. announced that the production of digitalis leaf was sufficient for all Aus-

tralian requirements. Whereas formerly the medical profession depended upon imported supplies of this made necessary by the sporadic collection of plants growing naturally, it was necessary in Australia to cultivate the right strain of plant and to dry it artificially under conditions that would retain the physiological properties of the leaf, and prevent subsequent deterioration by enzyme, mould or fungus action. Today the leaf is pressed into bales, each bale or leaf sampled in an accurate manner, and the potency of the sample determined at the Pharmacological Department of the Physiology School of the University of Melbourne. The potency of separate harvestings ranges from unit to nearly twice that strength, expressed in the scale of potency prescribed by the *British Pharmacopœia*. By adjustment and dilution the material for the tablet maker is brought to standard strength, international units. This is a notable achievement in Australian drug production, and indicates clearly the value of cooperation between the university worker and the commercial manufacturer.

Stimulant Action of Iron

An important notation on the stimulant action of iron appeared in the *British Medical Journal*, November 29, 1942. It was timely, for in Britain the difficulties of diet and the shortages of iron-containing foods have made necessary the therapeutic administration of iron. This is especially important for pregnant women whose hematological condition is inferior to what it was before the war. The fact that children during the first two years of life are frequently anemic and women during the years of menstruation are in a similar condition, is not sufficiently realized and often escapes notice. During menstruation a considerable amount of iron is lost at each period and in menorrhagia four times as much may be lost. During pregnancy an average daily storage of iron is required. Therefore, many anemias in which the hemoglobin percentage is low may be simple nutritional anemias resulting from a lack of iron in the diet. Consequently, foods rich in iron should be given.

In wartime such foods are usually difficult to obtain and iron given therapeutically is also not as readily available as in normal times. It may be pointed out that only when the concentration of iron in the intestines greatly exceeds that in the tissues does iron pass from the intestines to the tissues. It goes without saying that in persons suffering from iron deficiency the concentration in the tissues is low and therefore these will absorb iron more readily.

However, the point we wish to emphasize is that iron is needed urgently, and should be supplied in food if possible; otherwise in requisite therapeutic doses for women during menstruation and for menorrhagia, and

for anemic subjects, including children. But foods rich in iron and therapeutic doses of iron sufficient for the purpose are more difficult to obtain now than in peacetime, the matter is worth consideration in order to work out a means for overcoming the lack.

News Items

Personal.—Dr. William J. Tiffany retired on March 23rd as Commissioner of Mental Hygiene, after thirty-seven years of service in the New York State Department of Health.

Eugene W. Scott, Ph.D., research assistant at the Kettering Laboratory of Applied Physiology, University of Cincinnati, has been appointed Gas Officer in the Medical Division, Office of Civilian Defense, Washington, D. C.

Dr. Hamilton Southworth, of the staff of the Medical Division, Office of Civilian Defense, Washington, D. C., has gone to London as a medical liaison officer with the British Office of Home Security.

Dr. Jack Masur, executive director of Lebanon Hospital, New York, since January 1941, has been commissioned Passed Assistant Surgeon in the U. S. Public Health Service and assigned to the Medical Division as Hospital Administration Specialist in the Hospital Section, succeeding Mr. Henry N. Hooper, who resigned in October 1942 to enter military service.

Dr. Abraham N. Franzblau, Cincinnati, professor of religious education and pastoral psychology at Hebrew Union College, Cincinnati, since 1931, has been appointed to the staff of the Medical Division, Office of Civilian Defense, Washington, D. C. Dr. Franzblau has been commissioned Passed Assistant Surgeon in the U. S. Public Health Service.

Dr. Dudley A. Reekie, Boston, regional medical officer of the First Civilian Defense Region, is serving as chief of the Field Casualty Section, Medical Division, in the absence of Dr. Leonard A. Scheele, who has been assigned to special duty.

Dr. A. Wilbur Duryee delivered, on March 24th, the sixth lecture in the Refresher Lecture Course in Cardiovascular Diseases, which is being given under the joint auspices of the New York Academy of Medicine and the New York Heart Association, Heart Committee of the New York Tuberculosis and Health Association. His subject was the "Management of Peripheral Vascular Disease".

Myrtle McGraw, Ph.D., delivered the fifth lecture in the eighth series of Lectures to the Laity being given at the New York Academy of Medicine, on Thursday evening, March 25th. Her subject was "Normal Growth and Development".

Dr. Jacques W. Maliniac, New York, is giving a series of lectures on war plastic surgery before the Cuban Military Surgeons in Havana.

Dr. Howard Fox, New York, has been appointed consultant in tropical medicine to the Secretary of War.

Dr. Arthur B. Lamb, professor of chemistry and dean of the Graduate School of Arts and Sciences of Harvard University, was presented with the William H.

Nichols Medal of the New York Section of the American Chemical Society for 1943, at a joint meeting of the Section and the Society of Chemical Industry held on March 5th.

Dr. Treat B. Johnson, Sterling professor of chemistry, Yale University, will retire at the close of the academic year.

Dr. Lloyd H. Gaston, Baltimore, assistant regional medical officer in the Third Civilian Defense Region, has been transferred to Chicago where he will be assistant regional medical officer, associated with Dr. John S. Coulter, Chicago, regional medical officer for the Sixth Region.

Dr. S. Charles Freed announces the opening of an office at 450 Sutter Street, San Francisco, Calif., where he will specialize in endocrinology and endocrine-gynecology.

Major Don D. Flickinger, a graduate of Stanford University Medical School, was awarded the Distinguished Flying Cross in 1941 for his work as flight surgeon on the pioneer trip of a squadron of B17's to the Philippines.

Dr. John F. Busch, of Atlanta, Ga., has been appointed director of medical and health service for the Eastern Area of the American Red Cross, with headquarters in Alexandria, Va.

Dr. David J. Davis, professor and head of the department of pathology, bacteriology and public health and dean of the College of Medicine of the University of Illinois, will retire on September 1st.

Dr. Henry C. Sherman, professor of chemistry, Columbia University, has been appointed head of the newly established Bureau of Human Nutrition and Home Economics of the U. S. Department of Agriculture.

Dr. Arthur W. Bingham, chairman of the committee on maternal welfare of the Medical Society of New Jersey, has been presented by the Academy of Medicine of Northern New Jersey with the fourth Dr. Edward J. Ill award.

Dr. Eugene Markley Landis, professor of internal medicine at the University of Virginia, Charlottesville, has been appointed George Higginson professor of physiology at the Harvard Medical School, effective July 1st, to succeed Dr. Walter B. Cannon, who recently retired.

Dr. Lewis Hill Weed, director of the School of Medicine of Johns Hopkins University, has been made chairman of the Medical and Health Advisory Committee of the American Red Cross. Dr. Weed has been chairman of the Division of Medical Sciences of the National Research Council since 1939.

Dr. Joseph L. Williams, associate professor of biology and chemistry at Lincoln University, Oxford, Pa., has been elected a Fellow of the Royal Entomological Society of London.

Dr. Frank A. Calderone has been appointed deputy health commissioner of New York, succeeding Dr. George F. Palmer who resigned on February 13th.

Dr. Edward C. Schneider, professor of biology at Wesleyan University, Middletown, Conn., has been awarded the John Jeffries award "for outstanding contributions to the advancement of aeronautics through medical research" of the Institute of the Aeronautical Sciences.

Clinical Society of the Reconstruction Hospital.—At the February meeting of this society, the evening was devoted to the subject of multiple injuries, which included fractures, contractures, and dislocations. Cases were presented by Dr. George A. Glass, Dr. Walter D. Ludlum, Jr., Dr. Henry H. Ritter, and Dr. David Goldblatt. At the March meeting of the society injuries about the shoulder was the subject selected for consideration. Cases were presented by Dr. Harry V. Spaulding, Dr. Emmett A. Dooley, Dr. Henry H. Ritter, Dr. David Goldblatt, and Dr. George A. Glass.

Meeting of Ophthalmologists.—A joint meeting of the Section of Ophthalmology of the New York Academy of Medicine and the New York Society for Clinical Ophthalmology was held on Monday evening, March 15th, at the New York Academy of Medicine. The paper of the evening was read by Dr. Edgar Mayer on the Present status of tuberculin therapy from the internist's point of view, and was discussed by Dr. I. Rappaport and Dr. Alan H. Woods. The following participated in a round table discussion on nonsurgical therapy in ophthalmology: Dr. Francis H. Adler, Philadelphia; Dr. Sanford R. Gifford, Chicago; Dr. Mark Schoenberg, and Dr. Alan H. Woods, Baltimore.

Dr. Baehr Visits Hawaii.—Dr. George Baehr, chief medical officer, Office of Civilian Defense, Washington, D. C., visited Hawaii recently. At the invitation of the Governor of the Territory, Dr. Baehr conferred with local authorities on civilian defense activities, which are being reorganized now that the government of the islands is in the process of being transferred from the Army to civil authorities. He remained in the islands about two weeks. En route to Hawaii, Dr. Baehr conferred with Emergency Medical Service officers in California, and on February 24th, spoke at the War Conference of the California Hospital Association, Berkeley, Calif., on "Recent Observations in England and Scotland" and "Hospital Participation in the Emergency Medical Service".

American College of Chest Physicians Cancels 1943 Meeting.—The following resolution was adopted by the Board of Regents of the American College of Chest Physicians at their Mid Winter Meeting at the Palmer House, Chicago, February 14, 1943.

WHEREAS: The American Medical Association has cancelled its annual meeting for the year nineteen hundred and forty-three; and

WHEREAS: The American College of Chest Physicians has since its inception held its meetings jointly with the annual meetings of the American Medical Association,

Be it resolved, That the Board of Regents of the American College of Chest Physicians meeting in Executive Session in the City of Chicago on the fourteenth day of February in the year nineteen hundred and forty-three, hereby proposes that the 1943 annual session of the American College of Chest Physicians be cancelled and that the reasons for the cancelling of this meeting are the same as those advanced by the Executive Council of The American Medical Association.

It was recommended by the Board of Regents that wherever feasible, State and District Chapters of the College arrange to meet jointly with their State and District Medical Societies and assist in preparing scientific programs concerning the specialty of diseases of the chest.

Symposium on Civilian Hospitals in Wartime.—This symposium, which was arranged by the United Hospital Fund of New York in cooperation with the Greater New York Hospital Association and The New York Academy of Medicine, was presented at the Waldorf-Astoria Hotel, New York, on Monday and Tuesday, March 29th and 30th. "The Impact of War on Our Hospitals" was the opening topic discussed at the opening session held on Monday evening, with Clarence C. Little, Sc.D., presiding. On Tuesday afternoon, March 30th, the subject of the "War and Special Services" was discussed. Dr. Claude W. Munger, director of St. Luke's Hospital presided. "Meeting War Conditions at Home" was the subject for Tuesday's meeting at which Thomas W. Lamont, LL.D. presided. The future of the voluntary hospital was also discussed.

Peruvian Physician Visits U. S. Plasma Laboratories.—Dr. Jorge Avendano, director of the clinical laboratories of the Hospital de Obreros, Lima, Peru, recently visited a group of Eastern hospitals under the auspices of the Office of the Coordinator of Inter-American Affairs and the Office of Civilian Defense to study the organization of blood and plasma banks and the preparation of both liquid and dried plasma. Dr. Avendano spent two weeks at the Bryn Mawr Hospital, Bryn Mawr, Pa., and several days each at Albany Hospital, Albany, Strong Memorial Hospital, Rochester, and Syracuse University Hospital, Syracuse, N. Y.

Obstetrics and Gynecology Examinations.—The general oral and pathological examinations (Part II) for all candidates will be conducted at Pittsburgh, Pa., by the American Board of Obstetrics and Gynecology, Inc., from Thursday, May 20th, through Tuesday, May 25th. The Hotel Schenley will be the headquarters for the Board.

American College of Surgeons.—A war session of the American College of Surgeons was held in Brooklyn, New York, on March 17th. Two symposia were presented on the care of the ill and injured, in combat zones and after evacuation from combat zones. There were panel discussions on administrative adjustments in professional staffs of hospitals in wartime and problems in wartime civilian medical practice.

Coming Meetings.—The ninety-second annual meeting of the Iowa State Medical Society will be held in Des Moines, April 29th and 30th, under the presidency of Dr. Frank P. Winkler, of Sibley.

The Missouri State Medical Association will hold its eighty-sixth annual meeting in St. Louis, April 18th to 20th, under the presidency of Dr. H. L. Kerr, of Crane.

The Medical Society of the State of New York will hold its one hundred and thirty-seventh annual meeting in Buffalo, May 3rd to 6th, under the presidency of Dr. George W. Cottis, of Jamestown.

The Illinois State Medical Society will hold its annual meeting in Chicago, May 18th to 20th, under the presidency of Dr. Edward H. Weld, of Rockford.

The California Medical Association will hold its annual meeting in Los Angeles, May 2nd and 3rd, under the presidency of Dr. William R. Molony, Sr., of Los Angeles.

The Medical Society of New Jersey will hold its annual meeting in Newark, May 25th and 26th, under the presidency of Dr. Elias J. Marsh, of Paterson.

ALCOHOL, ALCOHOLISM AND THE ALCOHOLIC

S. I. KATZOFF

San Francisco, Calif.

From the dawn of history to the present time, men and women have felt the need of some form of emotional and physical escape from the harshness and inflexibility of their environment. These havens of refuge, or emotional retreats, although temporary in character, have served as escape mechanisms from difficulties encountered in attempts to grapple with the stern and inexorable laws of reality. They have done more; they have helped toward adaptation and adjustment to surroundings which are inimical or hostile.

Alcohol and its derivatives have always served their purpose in the capacity of escape mechanisms—good or bad—in addition to being a medicine, a preservative, an antiseptic, an irritant, a poison, a symbol of sociability, and what not.

Paradoxical as it may seem, there are men and women who do not hesitate to condemn acquaintances and members of their own families for drinking alcoholic beverages, and then they, themselves, christen a new ship, hail the New Year, and even make a toast to the bride in the usual alcoholic manner, with the best of intentions, and all because it is customary! No wonder it has been said, "The most consistent thing is inconsistency". What is more, such socially approved drinking habits make it more difficult to establish medical and legal control, prevention and cure, if and when scientifically and socially indicated.

The History of Alcohol

The word alcohol is derived from the Arabic *al-koh'l*, which means "something subtle". The genesis and history of the use of alcohol, and all that the term alcohol implies, is as old as the human race. Even in the ethical and behavioristic teachings of Confucianism, in the Koran, and as far back as in Sanskrit writings, the subject has been considered. Perhaps we may even mention the hieroglyphics of antiquity, symbolically demonstrating the unquestionability of its existence and influence. From time immemorial, alcohol has had its marked influence upon the ontogenous growth of the human race.

Egyptian carvings, as well as Greek and Roman writings, abound in references to its pleasant taste and numerous properties. In the earliest Scandinavian sagas, we learn of their mead. The same may be said of the pulque and mescal of the Mexicans, the arrack of Orientals, and the use of vodka by the Russians during the czarist period. The one exception of almost all primitive peoples is the North American Indians, who were almost unique in their nonindulgence (prior to the coming of the white man).

Physiological Action of Alcohol

1. Alcohol, physiologically considered, is classified as a narcotic poison, a cerebral depressant, an anesthetic, an antiseptic, an antiparasitic, and as an irritant.
2. Alcohol coagulates albumin by abstracting its water.
3. Alcohol is a diffusible substance.
4. Alcohol is partially oxidized by the body itself,

and is partially excreted from the system by the kidneys and other eliminative organs.

5. Alcohol is considered a food if consumed in small quantities, to the extent of the ability of the adult organism to oxidize it thoroughly. If more than one and one-half ounces, or forty-five cc., is consumed within twenty-four hours, it becomes poisonous, since it creates structural changes, and lowers bodily resistance.

6. Strange as it may seem, the very young and the very old tolerate alcohol more readily than the average adult.

7. Alcohol stimulates the heart reflexly by prolonging its systolic action and reduces the length of the diastole.

Acute Alcoholism

Acute alcoholism, as the name implies, is a temporary suspension of harmonious functioning or coordination of the physical, mental and emotional faculties, due to the excessive intake of alcohol or any of its preparations. What constitutes excess for one individual may not apply to another, since the degree of tolerance, natural or acquired, for alcohol, is dependent upon numerous factors, prenatal, as well as postnatal, including hereditary, constitutional and environmental forces.

It is estimated that a healthy adult, who consumes alcohol daily as a routine practice, would be within normal limits if he consumed no more than two ounces daily.

Symptomatically speaking, acute alcoholism is characterized by a reddened or flushed appearance, muscular incoordination, mental deviations, dilated pupils, full, bounding pulse, disturbed respiration and subnormal temperature.

The treatment of acute alcoholism as a rule consists chiefly in making the patient comfortable while he is asleep. Usually, the contents of the stomach are evacuated, either by a stomach tube or by emetics; soothing or mild sedative medication is administered, with warm baths, and hot applications or sudorifics to promote perspiration. In some cases stimulants may be indicated, such as *nux vomica*, caffeine, or coffee.

Chronic Alcoholism

Chronic alcoholism is a pathological condition characterized by a distinct syndrome, or group of symptoms, the result of the long continued use of alcohol. Every organ of the body is influenced by the chronicity of this disease. Particularly affected are: stomach, liver, pancreas, kidneys and blood vessels, and of course, the brain, spinal cord, central and sympathetic nervous mechanisms. The chronic effects of alcohol create degenerative changes in the system, such as fibrous hardening of the musculature of the heart, and also of the walls of the arteries.

Microscopic examination would show an overgrowth of fibrous tissue and a wasting of the tissues and cells that concern themselves with the filtering and eliminative process of the kidneys. The kidneys eventually be-

come shriveled and granulated, instead of remaining smooth. The hobnailed liver of the alcoholic is an old story, technically known as cirrhosis of the liver.

Treatment of Chronic Alcoholism

The treatment of the alcoholic addict depends on numerous factors and circumstances. Whether the chronic alcoholic is treated in an institution or at home, certain fundamentals must be acknowledged as of paramount importance.

Medically, chronic alcoholism must be viewed in the light of the following:

1. The intoxication as it exists at the time of examination.
2. How to deal with the craving symptom soon after gradual or complete withdrawal is begun.
3. The effect of withdrawal upon the constitutional forces, with particular reference to the mental and nervous faculties.
4. The direct pathological conditions in certain bodily areas.
5. Other factors, including the effect of kinsfolk, occupational detachment, and other outside influences.

The attending physician should be patient, considerate, kind, encouraging, and yet definite and persistent in his approach and efforts. The results obtainable depend as much upon the vitality and recuperative powers of the patient, together with the cooperative spirit of all parties concerned, as it does upon the attending physician and the remedial measures applied. No physician in private practice, or at institutions, could, or should, guarantee that any patient is absolutely cured.

Although food containing sufficient vitamins and other nutritional ingredients, climate, change of environment, occupational changes, specific medication, rest, massage, hydrotherapy, heliotherapy, mild, graduated exercise, and similar contributory factors have their field of usefulness, nevertheless, psychiatric, as well as neurological measures, must constitute an all-inclusive campaign toward the maximum accomplishment.

Even when apparently cured, it is usually advisable for the former patient to keep in contact with his physician for direction and instruction in the correct dietary, hygienic, environmental and home patterns.

In order to apply what knowledge we have thus far attained in regard to remedial and curative measures for the treatment of alcoholism, one must take into consideration, among other things, the following items in the patient's history: heredity, history of birth, including trauma and congenital malformations, defects and diseases of a mental or physical nature, the history of infancy, childhood, pubescent and adolescent periods, and early adulthood up to the time of his examination.

An alcoholic can sometimes best be treated, not by sloganizing him with will-power aphorisms, but rather by circumventing him, keeping him busy, and replacing the emotional appeasement received from alcohol with other pleasurable, new interests. These must be equivalent to, or greater in interest than that upon which he has depended.

If alcoholics are responding satisfactorily to treatments, they should be gainfully employed and return to the hospital every evening for meals, treatments,

rest and care. Thus they would be getting well, while their families would not be dependent upon charity.

Home Influences

The home environment must not be overlooked in studying the etiology of acute, periodic or chronic alcoholism. Children should be reared in keeping with their dispositions, constitutional capacities and temperaments, instead of emotional whims, matriarchy, patriarchy, stifling regimentation, and the censorship of Madam Grundy. To the same side of this emotional ledger may be added extreme pampering and its subsequent dependencies. An untrammelled childhood would prevent, or substantially lessen alcoholic intake during the adolescent period, as an unconscious effort to escape the effects of parental tyranny, or the spirit of "getting even with them".

The alcoholic quite often assumes the rôle of a martyr, especially, if at home he is constantly reprimanded or reminded of his inferiority or inability to conquer himself. The subsequent sympathy from others, particularly fellow drinkers, may encourage his martyrdom, and sometimes even prevent a desire to be cured.

Legal Aspects

Physicians and others directly concerned with the study, diagnosis, treatment, cure and prevention of alcoholism, should be officially attached to courts having jurisdiction in these matters. They may consult with, and recommend to the court such remedial measures as tend fundamentally to help the apparent criminal, who, in reality, is a sick person. If a person should be found sick or helpless in a public place, he would receive medical attention. However, if found *alcoholically* ill, he is considered to have committed a penal offense, and is usually charged with public intoxication or disturbing the peace. Such punitive measures, including an early release, are ineffective insofar as treating the weakling is concerned, and will only mean further indulgence, repeated sentences and no thought of cure or prevention.

Conclusion

As for the numerous neurological, neuropsychiatric and psychological deteriorations, degenerations and diseases, such as delirium tremens, Korsakoff's psychosis and other organic disorders, their descriptive analysis would entail the writing of a volume. They constitute a large percentage of alcoholic mental aberrations which help to fill hospitals, penitentiaries, jails and almshouses.

The solution of this complex problem with all its ramifications and implications necessitates the judicial and objective probing and analysis of those who are scientifically and humanistically minded. What should concern one serving in such capacity is the ascertaining of the *why* and *how*, or the causative forces that make for this issue. The subject is imbedded in the historical fabric of the human race from time immemorial.

To the extent that the causes are fearlessly, judiciously and scientifically ascertained, and the spirit of "we are our brother's keeper" shall be definitely established as a universal, fundamental concept and truism, will humanity have to grapple with the problem, as the problem is now grappling with humanity.

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AMPUTATIONS AND PROSTHESES THROUGH THE CENTURIES

BERNARD J. FICARRA

Brooklyn, N. Y.

(Concluded from page 156)

To the patient who has had a limb amputated, the surgeon has an added responsibility. Life itself may be the price for indifference. The adequacy of the prosthesis can alter the mental outlook as well as the physical well-being of the patient. Either the patient will consider himself a useless cripple or feel he can be adjusted to fit into the pattern of society. The prosthetist concerns himself not only with the making and fitting of the artificial appliance, but suggests the amputation site. He is interested in all phases of the task with the objective of making the stump as nearly perfect as possible. For it is known that without a proper stump, no appliance can function properly.

Through the passing decades surgeons have studied this question. Their desire was to find the most suitable amputation site for the most efficient prosthesis. In France, Chopart (1710-1881) and Lisfranc (1790-1847) investigate this aspect with much enthusiasm. Other contributions to this topic were made by the Russian Pirogoff (1810-1881) and the Italian Gritti (1828-1920). The latter's findings were substantiated by the American Stokes (1804-1878). Carden (died in 1872) and Syme (1799-1890) of England published valuable data based on their amputation results. All were eager to find the ideal site which would enable them to formulate some general principles of amputation.

General Principles

Studies, experiments, success and failure have evolved in some measure certain fundamental principles. In amputation of the lower extremity the surgical theory had been to save all possible length. "This has been disproved since many resulting stumps are difficult to fit, uncomfortable, unwieldy to use, and unsightly in appearance. Too often such stumps necessitate reamputation before a prosthesis can be successfully worn, or else the patient is compelled to go through life without the benefits of modern prosthesis (6). "The site of preference for amputating the lower extremity is through the middle third. Gritti's amputation is a very useful arthroplastic method" (19). Haddan believes that extra long stumps, disarticulations of knee and ankle, and the majority, if not all, of partial foot amputations should be avoided. Most surgeons agree that amputation of the lower third of the leg is never recommended.

Important factors have been learned on the mobility and weight-bearing ability of the stump. The former concerns its excursion as well as its active strength. The latter depends essentially upon a large surface, hardening of the skin, bursæ at the point of contact and the integrity of nerve and blood supply (19). At one time it was considered correct to shorten nerve ends and to inject them with alcohol. The injection practice may lead to an alcoholic neuritis and hence is not advocated.

Through judicious management of the patient and the satisfactory application of prosthetic legs, a good substitute for the real one can be made for ordinary walking. The reason is that the required movements

are few, not too complicated, and can be copied quite efficiently by a modern artificial leg.

When considering the upper extremity no functional substitute can be found for the natural arm. Here, too, the amputation site is the major factor for adequate functional and cosmetic proficiency. Partial amputations of the hand are not favored because of unsightliness plus the inadequate fitting of an artificial appliance. When a thumb and index finger are lost, the hand is practically functionless. If such a hand is fitted with a prosthesis it can possess only esthetic value since it is functionally impotent. Wrist disarticulations are unsatisfactory because of insufficient soft tissue, poor circulation and difficulty associated with fitting an artificial hand.

A general statement on amputation of the forearm is that the junction of the lower and middle third is the ideal location. An amputation just above the condyles of the humerus offers the best site for upper arm amputation. Prostheses can be fitted to shoulder disarticulations but their value is largely cosmetic (6, 19). Briefly it may be said that the use of a prosthesis for the upper extremity has not been as satisfactory as lower limbs. Successful wearing of a prosthesis depends upon the character of the stump, the attitude of the individual and the nature of the prosthesis.

One of the most popular cosmetic appliances is a mechanical arm without any hand function. The hand may be rubber which can be placed in various positions by the normal hand. The most common type of mechanical arm is one in which the hand mechanism is activated by a cord attached to the opposite shoulder. Where an individual has to do heavy work, the arm may be of heavier construction. Some of these appliances are fitted with removable hooks such as the Bowler or Dorrance hook (9). "In the cineplastic amputation the remaining muscles in the stump are utilized to activate the prosthesis. By means of pegs passed through canals in the muscles and attached to levers operating the artificial hand mechanism, the physiological action of the stump muscles is restored" (9).

Care of Stumps

Orthopedists agree that the success of an amputation and prosthesis depends upon the postoperative care and the proper preparation of the stump for prosthesis. Experience has brought to light several facts in reference to treatment. The care of amputation stumps has for its purpose the improvement of local blood circulation and the prevention of faulty positions and ankylosis of neighboring joints.

To prevent malposition and ankyloses, movements of the stump should be started a few days after amputation. Faulty positions are abolished by active exercises of the stump, and by passive stretching. Early gymnastics of the stump prevent contracture as well as atrophy of the muscles which are necessary for the appropriate use of a prosthesis. When muscles weaken and become flabby, bones become atrophic. Flexion and ankylosis are then more likely to occur. When edema

occurs massage, elastic compression and bandaging are found useful.

All artificial limb-makers agree in their warning against wearing any temporary prosthesis for a long time since it affects the gait, and furthermore, does not teach the patient to walk properly. The use of wooden legs tends to fix contractures which may be present in the hip or knee joint while prostheses will tend to mobilize them. The orthopedists have concluded that improvised prostheses are generally justified only in time of war, when adequate appliances can not be obtained in sufficient quantities in the time demanded. In peacetime makeshift prostheses should not be used as they are not much better than crutches. Moreover, the patient should learn from the beginning to walk as normally as possible with his prosthesis (8).

Prosthetic Construction Material

Plaster of paris bandages were introduced by Anthony Matthijsen (1805-78), of Holland, in 1852 (4). This material was one of the first employed in constructing peg legs. It was soon learned that most amputation stumps with ample soft tissue were capable of bearing weight in buckets formed of plaster of paris. The only prerequisite was accurate molding of the plaster to the surface of the stump to avoid friction.

Addison introduced wood in the construction of artificial limbs. Any type of wood is suitable, preference is given to those which are light and durable. Thus hickory, walnut, linden and willow are desirable. Cork was used but discarded because of brittleness. Wooden receptacles for the stump are heavy, therefore leather has been preferred. The outstanding proponent for wood in prosthesis is Hermann of Prague (19).

Hard rubber was first employed by Joseph Leiter of Vienna. This is characterized by greater resistance, durability, and facility of molding a form to fit the limb.

Leather is used for permanent limbs. Closed cuffs, which can be regulated by lacing, fit the shape of the stump as it changes. This is especially true of the thigh cuff which is used for artificial limbs (19).

In addition to leather and wood, sheet metal, fiber and cellon have been utilized. Cellon in the form of a fiber leg was employed during the first World War. Lacking durability it was abandoned. "Paper, combinations of celluloid, shellac, water, glass, glue, etc., have been used. For the metal legs are recommended the new silver, aluminum and bronze. Over the stump are placed stockings or stockettes of firm material. In order to alleviate pressure, other auxiliary means are used, such as cushions of rubber and sponges. Many have called attention to the fact that it is expedient to set the stump in a ring in the bucket, so that the stump may be free without any pressure" (19). In the construction of sockets for artificial arms, block leather, metal or certalamid are preferred. With these basic materials an external form is created by the artisan in an attempt to approximate in appearance the missing limb.

Conclusion

The day has passed when the surgeon's duty terminates at the bedside of the amputated patient. The application of an artificial limb is the concern of the surgeon, although the making of a limb is the specific task of a limb-fitter. Their close relationship results from a common interest in perfecting the efficiency of

an amputation stump. Every amputation should be done with the thought in mind of constructing a stump that is most suitable for a prosthesis. Where possible there should be adequate cooperation between the surgeon and the artisan: one aiming at providing an ideal stump, the other at employing his ingenuity to fit an appliance as functionally perfect as possible. Thus there has been created a new meticulous art devoting itself to returning to the cripple that body which is his rightful heritage.

The amputation and prosthetic problems remain among our most creative surgical topics, pre-eminent from a combined medical, social and economic viewpoint. In no other instance can the socioeconomic trend in modern medicine be visualized with more clarity than in cases of amputation. Today the vision of medicine is panoramic. The age is gone when the man of medicine concerns himself solely with the treatment and cure of his patient. The modern doctor is not only a healer, but a psychologist, a sociologist and an economic adviser on many occasions. A person with a missing extremity is a typical example. The leg has been removed to save the patient's life, and with great diplomacy the surgeon must inform the patient of his loss. Then he must assist the prosthetist in arranging for an artificial limb. The doctor's encouragement and understanding guides the patient as he is assisted in rehabilitating himself into the society he must face with courage and confidence.

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1702 FORTY-SIXTH STREET

Medical Milestones

Rudolph Virchow, Prussian Humanist "The mission of medicine is above all to prepare for the era of peace.

In the midst of the horrors of war she, and she alone, is officially called to be present on battlefields, the representative of humanity and peace among men. Without discrimination she takes into her helping arms friend and foe alike to heal the bleeding wound, to nurse the broken limb, to cool the thirsty mouth. In the smoke of cannon on battlefields she unfurls the banner of the Red Cross, which is recognized now by civilized nations as the symbol of immunity for the wounded, assuring them not only security from attack but helpful aid as well. Whenever needed her simple huts and barracks are erected, retreats of love and compassion." Nearly seventy-five years ago a great physician, an authority on military medicine, wrote these words. The occasion was the Franco-Prussian War; the writer, almost unbelievable to us now, was a *German*, the ruler of German medicine for a half century. He was Rudolph Virchow, founder of the *Archiv für pathologische Anatomie und Physiologie und für klinische Medizin* and of *Das medizinische Reform*. Virchow's attitude of understanding and sympathy for all humanity, of tolerance even for the enemy against whom his country was fighting, his craving for a state of peace and amity among all men, are a tragic commentary on the deterioration, even degeneration obvious today, of a once proud and admirable people.

In the same article, "Der Krieg und die Wissenschaft," published in the *Archiv* in 1870, Virchow paid tribute to the liberalizing views broadcast by the French Revolution as follows: "We realize what we owe to this people. Germany has certainly been most sincere in her appreciation. German science and medicine especially have enthusiastically followed the paths opened by the great French thinkers of the last and of the beginning of the present centuries. While Germany followed these paths independently, adding all these new achievements to her own store of science, she gratefully and constantly remembers those responsible for inaugurating a new era." Opinions these from a mind, tolerant, cultured, humane—a contrast to the intolerant Teutonic viewpoint of today.

The Germany of Virchow Virchow's hatred of war, his pleas for settlement of struggles, and his craving for peace were born

of a vast experience of war. The time in which he lived was the period of struggle during which Germany was making herself a world power. Naturally, in a man of Virchow's mental power and strength of character, the spirit of patriotism found inevitable expression; but when this spirit became intolerant nationalism, tending to destroy in his people a liberal view of the rest of the world, Virchow was by no means slow in criticizing the war lords and calling their attention to admirable qualities even in the common foe. For this courage to speak freely and openly on subjects which most German citizens feared even to discuss among themselves, Virchow was considered an oddity, a radical, and something of a disturber. But he was a man of too much acknowledged superiority and importance for even the

increasingly strong Prussian militarists to down; he continued to fight for his liberal principles and to decry the evil influence of war in preventing the "calmness of mind so essential to the methodical pursuit of scientific research. . . . In the midst of serious research work, not free from our own inner struggles, and engaged in a labor that strives to benefit every field of human endeavor—state, society, religion, science—we are interrupted by the tyranny of war forcing us to a united defense. Ours must be the victory, only that we may achieve quiet and peace in our domain. . . . We by no means wish to imply that many an ignorant one is not fighting on our own side also; there exist many unnecessary prejudices, false assumptions, and a lack of education and culture among our own combatants. . . . It is sad to think that we are not able in this situation, as we should like to do, to separate the government which brought on the war from the people whom they led into it."

A Typical Prussian Weakness In a few ways even the great Virchow showed Prussian weaknesses, some of them indicative

of certain Germanic theories of today. The most famous example of these is his well known examination of the German children. A typical bombardment during the siege of Paris of a famous French museum caused one of that country's well known naturalists to declare the Prussians to be, not an enlightened Germanic race, but "a destructive, barbaric Mongol horde". This denunciation of his own people aroused Virchow to the organization of a wholesale public census of color of hair and eyes in more than six million German school children, the solemn, official character of which is said to have scared some of the youngsters out of their wits.

Virchow's Place in History This short personality sketch is offered, not in any way as a brief for Teutonic methods and philosophy of today; but to indicate that the time has been when a patriotic German felt it incumbent upon him to criticize openly the war lords of his land and their ways—and he was able to "get away with it"! Such a time may come again.

"We have seen how an important war disturbed the thoughts of a great physician and a great man," writes Dr. Leon Goldman in a biographical sketch of Virchow (*Annals of Medical History*, November 1936). "We have seen how, with his make-up, his background and his times, he reacted. . . . He spoke often of peace. . . . He did not generalize with vague idealism, impossible to attain. He spoke firmly and practically at that time, and he speaks firmly and practically for the world of today, when he says as a physician, scientist, and unselfish liberal that, 'with peace once more may the entire world of science assert its influence to promote for all the reconciliation of minds and hearts and insight into the community of interests for all the world. Then may every nation recognize that its true purpose and life work can be realized only upon the foundation of individual national development, and for that reason every soil must be free from invasion from without. True national development must find its highest goal in that humane understanding which raises the individual far above the narrow confines of mere nationalism to the highest realms of all humanity.'"

MEDICAL RECORD

A National Review of Medicine and Surgery, Established 1843

FORMERLY KNOWN AS THE MEDICAL JOURNAL AND RECORD

PUBLISHED MONTHLY BY

THE MEDICAL JOURNAL AND RECORD PUB. CO., INC

Office of Publication: 210 Orchard Street, East Rutherford, N. J.
Editorial and Executive Offices: 215 Fourth Avenue, New York, N. Y.

GREGORY STRAGNELL, M.D. - - - - Editor
A. M. MARLATT - - - - Assistant Editor
N. F. HANF - - - - Business Manager
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Subscription Price: Under Domestic Postage, \$4 Yearly; Under Foreign Postage, \$4.75 Yearly; Single Copies, 40 cents.

Remittance should be made by New York Exchange, post office, or express money order, payable to The Medical Journal and Record Publishing Company, Inc., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

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All material for publication should be sent to THE EDITOR of the MEDICAL RECORD, 215 Fourth Avenue, New York, N. Y.

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APRIL 1943

Medicolegal Notes

Misbranding of Medical Devices

The Federal Food, Drug, and Cosmetic Act of 1938 authorizes the destruction of misbranded devices. The term "device" is defined in the Act, which provides that if the device is alleged to be misbranded because of misleading labeling, in the determination of that question there shall be taken into account, among other things, not only representations made in the labeling, but also the extent to which the labeling leads to reveal material facts. "Labeling" is defined to include all labels and other written, printed, or other graphic matter, upon the article or any of its containers or wrappers, or accompanying the article. Where a libel charges false and misleading labeling the good faith of the manufacturer is not an issue. The inherent dangerousness of the device or lack of it is of no consequence. The issue is simply whether the claims made for the device are false or misleading.

In a libel by the Federal Government against six devices, seeking their destruction on the ground that they were misbranded and mailed in interstate commerce, it appeared that the principal and most numerous claims for the device, referred to as "The Mechanical Heart",

were contained in a booklet which accompanied the devices seized. The booklet claimed the device would relieve pain, strengthen weak eyes, improve the hearing, cure earache, moisten dry noses or dry running noses, thicken the lips, relieve toothache, strengthen the voice, relieve sore throat, build up weak lungs, relieve pleurisy, strengthen the kidneys, cure lumbago, relieve constipation, and soothe piles; was good for neuritis, subtraced pain from burns, relaxed the muscles in a stiff thumb, and soothed the pain in a mashed finger; retarded or accelerated the development of a boil, healed broken noses, relaxed muscle cramps; was good for varicose veins, and would warm cold feet or stop the feet from perspiring.

The booklet then gave specific directions about how to use the device for the treatment of some fifty specified ailments, ranging from headache up to hardening of the arteries and paralysis and down again to how to enlarge the bust and to stop falling hair.

The testimony of the manufacturer of the device indicated that the theory on which the multitudinous claims were made was that the instrument produced a faradic electrical current with the alternating impulses occurring at the rate of 140 to 180 times a second, which would cause the muscles and muscular tissue of the body to contract and relax with beneficial results.

Convincing expert testimony was offered by the Government that even the principle sought to be followed by the makers could not be applied with the instrument. One witness, describing a diagram of the human anatomy and accompanying descriptive matter appearing in one of the exhibits, summarized the extent of the accuracy of the actual claims by stating that there was an element of truth in the diagram, that being that the head was on the right end of the picture and the "rump" appeared in the proper position. A leading physician stated the benefit to be derived from the use of the instrument, from a practical viewpoint, was that it would not injure one if there was nothing the matter with him, but if he was suffering from a disorder or ailment its use might and probably would be injurious.

The court said the evidence forced the conclusion that the claims made for the devices in the literature accompanying them were "as falsely misleading as might well be possible by the use of the English language" and ordered their destruction. The Government did not seek a penalty other than the destruction of the devices. *United States vs. 6 Devices, "Electreat Mechanical Heart,"* Federal District Court for Western Missouri, 38 F. Supp. 236.

"Good Health" in Life Insurance Applications

Good health, as used in the ordinary sense by a person speaking of his own condition, means apparent good health, "and does not exclude the existence of latent, unknown defects." But, the Fourth Circuit Court of Appeals says, in *Combs vs. Equitable Life Ins. Co. of Iowa*, 120 F. 2d 432; "It is doubtless competent for a life insurance company, in its policies, to take the expression 'good health' out of its common meaning and make it exclude every disease, whether latent and unknown or not (assuming that any person would ever accept a policy of that kind), but it must do so in decided and unmistakable language. The mere statement by a party that he fully warrants himself to be in good health is not sufficient."

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Book Reviews

Orthopedic Manual

Orthopedic Subjects. Prepared and edited by the Subcommittee on Orthopedic Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Illustrated. Philadelphia and London: W. B. Saunders Company, 1942. Pp. 306. Price \$4.00

This is the fourth in the series of *Military Surgical Manuals*, and it is one of the best. It does not pretend to cover the entire subject of orthopedics in detail—everyone knows this would be impossible—but limits the subject matter to four sections. The first section deals with Ununited Fractures and is written by Paul B. Magnuson. The second has to do with Injuries of the Spinal Column and it is written by Arthur G. Davis. Section III describes the care of Compound Fractures as set down by J. Albert Key, who also has written Section IV. This latter section deals with Osteomyelitis.

Dr. Key states that the Carrel-Dakin treatment of wounds, so widely used in World War I “still has some adherents”, but he prefers the Orr method, the use of sulfathiazole and the plaster cast to insure fixation. Likewise, Baer’s maggot treatment is “expensive, disgusting and is little used at this time.” The length of time formerly consumed in these infected bone cases has been remarkably shortened with much better functional results than have been obtained hitherto.

Of all the manuals yet published, and there are two more to come in this series, these authors have produced a book which is not only an excellent field guide, but which will prove a real help far behind “the lines” of battle in base hospitals everywhere.

Anesthesia and Analgesia

Recent Advances in Anesthesia and Analgesia (Including Oxygen Therapy). By C. LANGTON HEWER, M.D., B.S. (Lond.), senior anesthetist, St. Bartholomew’s Hospital. Fourth edition. With 135 illustrations. Philadelphia: The Blakiston Co., 1942. Pp. 341. Price \$5.00.

Ten years ago the first edition of Mr. Hewer’s book appeared in Great Britain, and its preface declared that this is no mere text-book intended to teach the elements and methods of anesthesia but its purpose was and is to record important recent advances which are becoming increasingly complex because of more refined surgical technics, and prolonged surgical procedures which demand great skill of the anesthetist.

Therapeutics is indebted to anesthesia. Such diseases as pneumonia, asthma, hiccough and eclampsia are based on a knowledge of the influence of carbon dioxide. Inhalational therapy, the use of oxygen tents, nebulized drugs, metabolism apparatus, and suction surgery are founded on studies which grew out of the administration of general anesthetics.

The author rightfully discourses against the confusion of names given to well-known drugs by proprietary firms. One well-known intravenous anesthetic masquerades under eight different appellations! A local analgesic has nine names, some of them similar in sound.

It is good to find a special chapter on resuscitation (XVI). Perhaps it should be placed nearer the beginning of the book. There are operating rooms in some hospitals where members of staffs are woefully ig-

norant of basic methods of resuscitation. Flagg in this country has called attention persistently to this omission and has aimed to correct it.

There is also satisfactory reference to “methods of ignition” of anesthetics in surgical rooms. Deaths from explosions are always due to ignorance or carelessness, neither of which can be tolerated in surgery.

This is a useful book which may be profitably read by everyone who at some time enters an operating room, and that means all of us.

Fractures

Fractures. By PAUL B. MAGNUSON, M.D., F.A.C.S., associate professor of surgery, Northwestern University Medical School. Fourth edition, revised. With 317 illustrations. Philadelphia, Montreal, and London: J. B. Lippincott Company, 1942. Pp. 510. Price, \$5.50.

The first edition came out in 1933 with subsequent printings in 1936 and 1939. This edition has been especially revised so that it may be of service in World War II. An effort has been made to crystallize the recommendations of the National Research Council with respect to effective primary treatment and transportation of fractures of the compound type. To this end the management of wounds in compound fractures, *debridement*, the use of sulfa drugs and the treatment of shock are emphasized. Chapter I deals with “Fundamentals” set down as aphorisms such as “Splint ’em where they lie. Treat the shock, stop the hemorrhage. Splint the fracture and transport the injured to a hospital. Treat the wound, and reduce the fracture after recovery from shock. Study the muscle pulls. Check frequently with x rays. Allow no painful pressure points under any cast. A properly reduced and retained fracture held in reduction is painless.”

This is a very practical volume which outlines all of the accepted methods of reduction and retention. The author has contributed much of his own thought and experience to the literature, and he has incorporated it here unobtrusively and helpfully.

Injuries of Face and Jaws

Synopsis of Traumatic Injuries of the Face and Jaws. By DOUGLAS B. PARKER, M.D., D.D.S., associate professor, Department of Oral Surgery, School of Dental and Oral Surgery, Columbia University. With 229 illustrations. St. Louis: C. V. Mosby Company, 1942. Pp. 334. Price \$4.50.

This author has not planned this as a text-book on oral or plastic surgery but as an outline for management of face and jaw wounds from the scene of injury to definite and leisurely treatment at a permanent base hospital. During World War I Dr. Parker served in a base hospital in France, and since his return he has had nearly thirty years of hospital and teaching work in maxillofacial surgery.

Traumatic surgery of the jaws and face is now fairly well taken care of by many articles which have appeared in medical and dental journals since 1939. During 1932 the Mosby Company brought out a similar work by Thoma. Parker’s book is not quite so comprehensive, but is sufficiently detailed to be of great service to those readers who always carry “pocket editions” with them when travelling. Without any desire to cavil concerning words, is not the phrase “Traumatic Injuries” tautological?

A pathetic note is found in the lines which dedicate this book “to the memory of my son, the late Aviation Cadet, Bradley Clinton Parker.”



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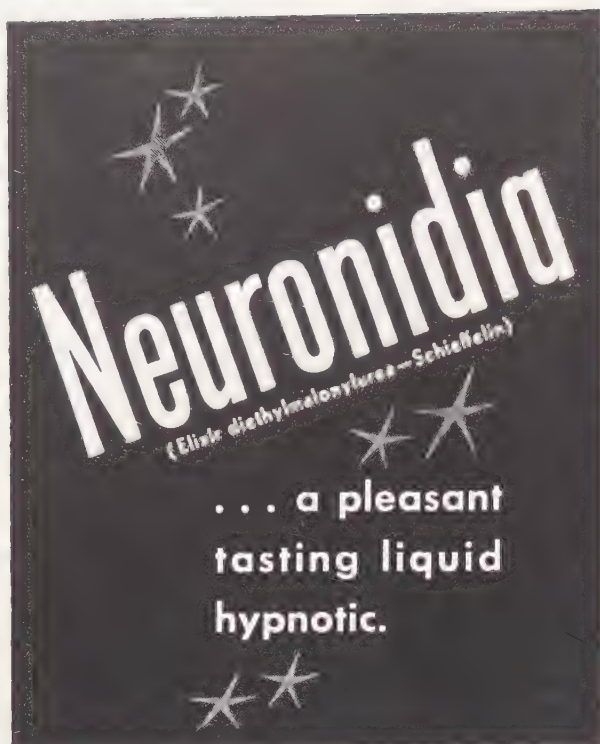
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The Use of Venom in Arthritis

(Continued from page 221)

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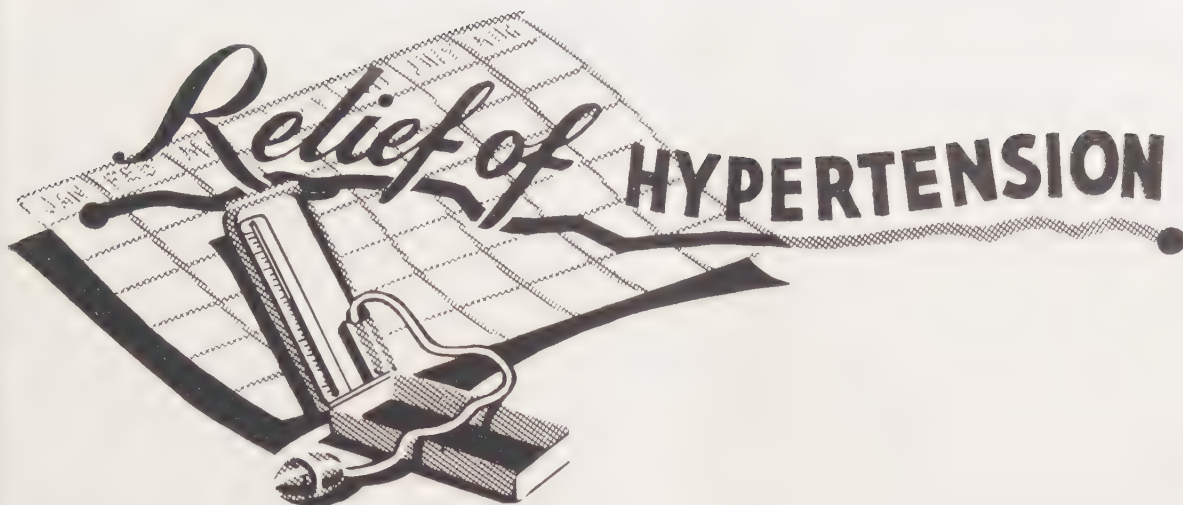
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A scientific "detective force" of six dermatologists and one chemist has tracked down causes of skin disease—and prevented further outbreaks—in more than fifty government and privately-owned arsenals and war plants, according to an announcement by U. S. Public Health Service officials. Before these doctor-detectives of the Public Health's Dermatoses Investigation Section went to work, almost fifteen percent of the workers handling explosives in these plants suffered from some form of industrial dermatitis.

The Dermatoses Investigation Section, known as DI, was organized in 1928 under the direction of Dr. Louis Schwartz, medical director of the Public Health Service. His section gets reports on skin disease outbreaks when plant doctors are baffled, and the DI doctors go to work until they unearth causes and are able to prescribe preventive measures. These doctors must be more than skin specialists; they must also be familiar with the processes used in making many products.

Interesting cases are reported illustrating the methods employed by these government scientists in controlling the spread of skin disorders in industrial plants. From past experience with many kinds of skin rashes these men are often able to make a diagnosis by reading a report of the products involved. They believe that the patch test is probably the surest way to discover the causes of skin irritations.

Public Health officials are interested in educating plant managers and personnel directors as well as plant doctors in skin disease prevention. The government doctors assure the industry men that there is little to

fear from most skin irritation. Most rashes can be cured by providing preventive measures such as protective clothing or ointments.

The Bromides

A. J. Balard discovered bromine in 1826 and it was named by Gay-Lussac, from the Greek *bromos* (a stench). The story goes that some years before this discovery a bottle of bromine was sent to Liebig with the request that he examine it. The great chemist heeded the request indifferently on the assumption that the substance was iodine chloride and put it away in a cupboard intending to examine it at his leisure. On the announcement of Balard's discovery he examined the contents of the bottle and realized what he had missed. Liebig then placed it in his "Cupboard of Mistakes", which he showed to his friends as an example of the danger of coming to a too hasty decision.

Bromine unites with hydrogen to form hydrobromic acid and this combines with several metals to form bromides. The chief use of the bromides of potassium and sodium has been in the treatment of epilepsy. They are mild hypnotics and sedatives and are given in conditions when such action is indicated. However, phenobarbital, better known as luminal, has to a considerable extent ousted the bromides in the treatment of epilepsy. In order to obtain the maximum effect with a given dose of bromide, the chloride content of the diet should be reduced. Various bromides are employed in medicine, but as the depressant action depends wholly on the bromide ion they all have the same medicinal value.

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Neuroses in England under War Conditions

"It is not easy to decide whether a mental disturbance, neurotic or otherwise, is directly attributable to war conditions, and particularly to air raids," says Aubrey Lewis in an article on the Incidence of Neurosis in England under War Conditions (*Lancet*, Aug. 15, 1942). "It is, therefore, more informative to find out whether there is more or less neurosis altogether since the war or since the intensive air raids than to count up the cases that seem to have been caused by the war." He presents data from various bombed areas, and summarizes the results of his survey as follows:

Air raids have not been responsible for any striking increase in neurotic illness. Crude figures from hospitals and outpatient clinics even suggest a considerable drop. Reliable data from London and Bristol, and the impressions of good medical observers, indicate that after intensive raids there is a slight rise in the total amount of neurotic illness in the affected area, occurring chiefly in those who have been neurotically ill before. Neurotic reactions may not show themselves for a week or ten days after the bombing; they usually clear up readily with rest and mild sedatives. Hysteria is uncommon, anxiety and depression are common.

This incidence of neurotic illness has been low in firefighters and other workers of civil defense. Insanity has not increased, according to available figures, though more persons with senile deterioration have been admitted to mental institutions than before, because their relatives could not any longer look after them or because the raids had in other ways disturbed their routine and their precarious adaptation. The same was

(Continued on page 252)

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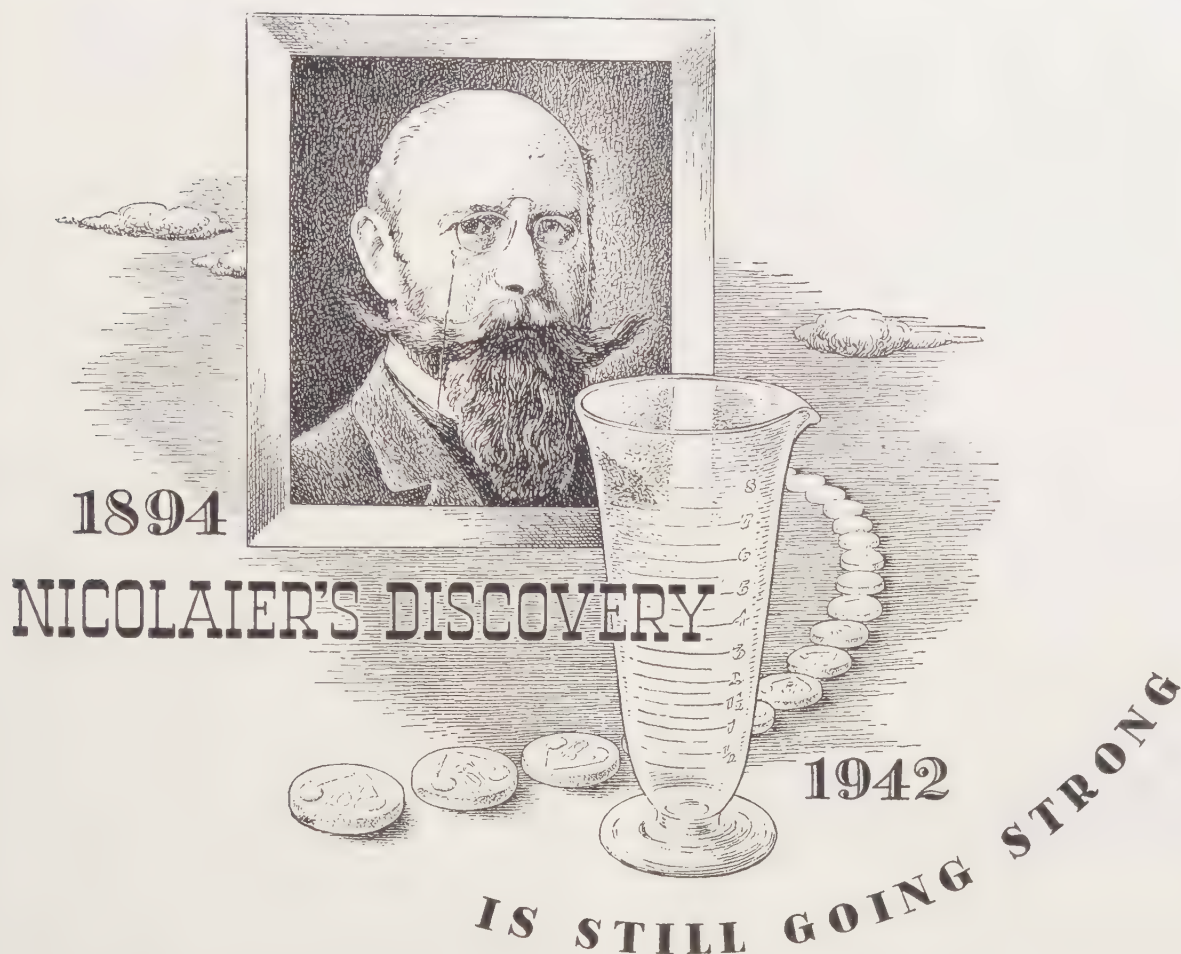


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true of some defectives. Suicide has diminished in Scotland, especially among the middle-aged and elderly. Figures for England and Wales are not available.

It is impossible to distinguish between neurotic illness due directly to air raids and that which may follow such secondary troubles as disruption and loss of one's home, evacuation, difficulties in transport to and from work, or temporary loss of employment. It is to the war as a whole, with its accumulated stresses, that people have had to adjust themselves, and signs of failure to do this can be taken as warning signals of neurosis. An increase in alcoholism would be such a sign; there is no evidence that there has been any increase of this sort.

Hypertension

A forty-page monograph on hypertension has just been brought out by Van Patten Pharmaceutical Company. This monograph presents a summary of the "present status of incidence, mortality, morbidity, symptoms, classification, pathogenesis, and treatment of arterial hypertension". Some of the statistical data, presented in the form of charts and tables, do not appear in any other review of the subject of hypertension, it is believed. The material has been prepared with scrupulous and painstaking attention to accuracy and with the needs of the busy doctor in mind. A reference list of ninety-six items is included.

This condensed but critical review of experimental and clinical data relating to hypertension will be found useful and valuable. It is available to physicians on request. The address of the publishers is 54 West Illinois Street, Chicago, Ill.

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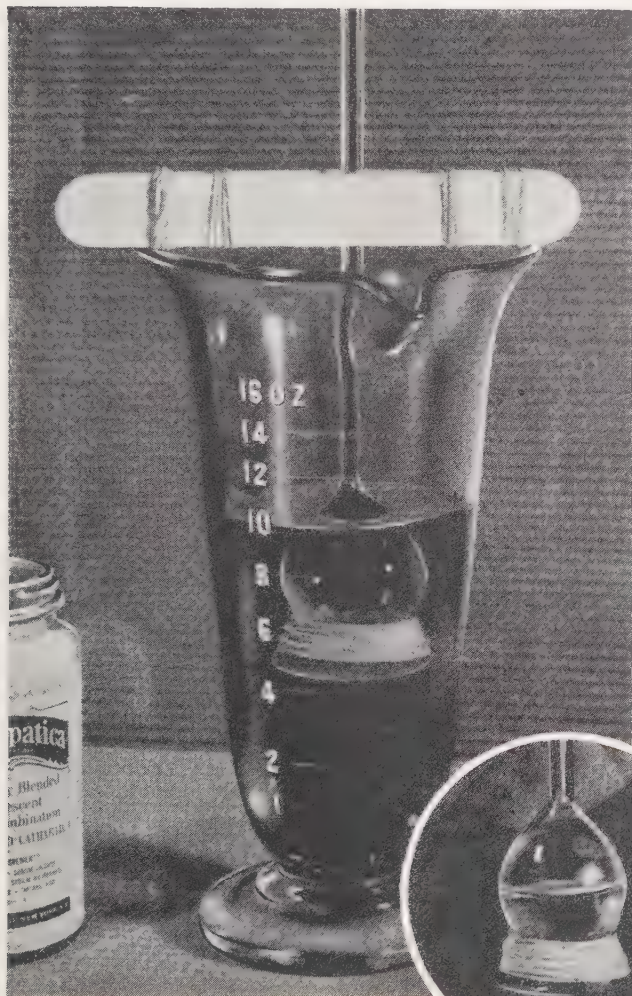
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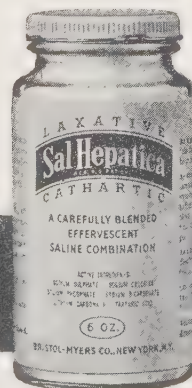
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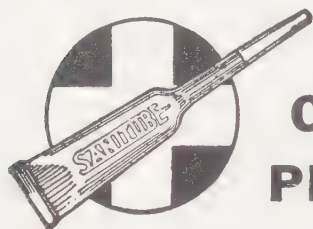
← Typical dialysis effected by solution of Sal Hepatica. At end of 4-6 hours the meniscus mounted almost to top of thistle tube from low level (see inset).

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To be certain that there are sufficient files for the future needs of the medical profession Schering Corporation is requesting physicians to send in their excess supply of files to pharmacists and dealers in a special envelope being provided currently by the pharmaceutical manufacturer. Files returned to Schering Corporation will be tested and sorted. Those in good condition will be redistributed to physicians as the necessity arises. Files which can no longer cut satisfactorily will be contributed to the national scrap metal salvage drive. Judging from the great weight of steel used for the manufacture of files in the past several years, a not inconsiderable quantity of metal, which is at present idle, should be secured by the government.

One may look upon this campaign as a type of voluntary rationing, for its success depends upon the efforts made by the individual physician to clean out his cabinets, bag, etc. and return the files.

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grams at WSA-USS centers. He says: "The seamen's yen for row boats and other water craft represent a vicarious display of their profession. It is a pleasure mechanism to indulge in that which is familiar and all adults, in their pleasure performances, frequently tend to regress to their childhood pleasure levels, coincidentally reflecting their adult place in life. And, inevitably, the play technique of the individual virtually always reflects in some degree, his or her occupational effort, experiences, habits or requirements."

"The seamen, in finding pleasure in rowing boats while on liberty, are motivated by the same psychology attributed to bus drivers in riding on buses on their days off; in causing letter carriers to go for long walks on free time, and in firemen, off duty, suddenly appearing at fires," he said.

"Seamen," continued Commander Blain, who has had extensive training in psychiatry and neurology, "like to make ship models; they are not prone to model the unfamiliar unless, of course, they are exceptionally imaginative, and a man possessed of too much imagination does not always make the best seaman, particularly in these hazardous days at sea. An over-imaginative mariner may well develop war nerves when exposed to prolonged war tension, and where war jitters exist, the seaman should have rest. That's why WSA-USS recuperation centers have been established."

Tuberculosis in Wartime

War has not changed the basic strategy of tuberculosis control, says Dr. Kendall Emerson. The cardinal points are: find the case early, institute rest and isolation immediately, treat with modern methods, rehabilitate. War, however, alters the community approach. Sudden growth of war industries has brought armies of new industrial workers and their families into our midst. These have not yet become part of the community pattern. It is essential that these millions of workers be reached in the early diagnosis campaign against tuberculosis. Education of the people, in war as in peace, is the driving power of democracy at work.

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Consistently good results may be

achieved with great economy in the treatment of the menopause, hypo-ovarianism, senile vaginitis and pruritus vulvae. Available in convenient dosage forms for parenteral, oral and topical application.

PARENTERAL

PROGYNON-B*
(alpha-estradiol benzoate)

PROGYNON-DP*
(alpha-estradiol dipropionate)

ORAL

PROGYNON-DH*
(alpha-estradiol)
in tablets and solution

TOPICAL

PROGYNON-DH*
(alpha-estradiol)
in ointment and suppository

*Trade-Marks Reg. U.S. Pat. Off.

SCHERING CORPORATION



BLOOMFIELD • NEW JERSEY



PICTURE OF A MAN WITH A Sore Throat

ACCURATE forecasts predict a tremendous increase in sore throats but they will be the kind that no medication will help. Commando victims will seldom recover.

However, there are thousands of sore throats that can be helped. NUPORALS contain the excellent anesthetic, NUPERCAINE* which affords prolonged relief from local distress. The lozenge dissolves readily in the mouth and the anesthesia develops quickly.*

Many physicians use NUPORALS before the passage of a stomach tube, thereby controlling the gag reflex. Others use them to alleviate pain from trauma, either surgical or dentural.

NUPORALS

BOXES OF 15

BOTTLES OF 100

*Trade Marks Reg. U. S. Pat. Off.



C I B A *Pharmaceutical Products, Inc.*
SUMMIT, NEW JERSEY